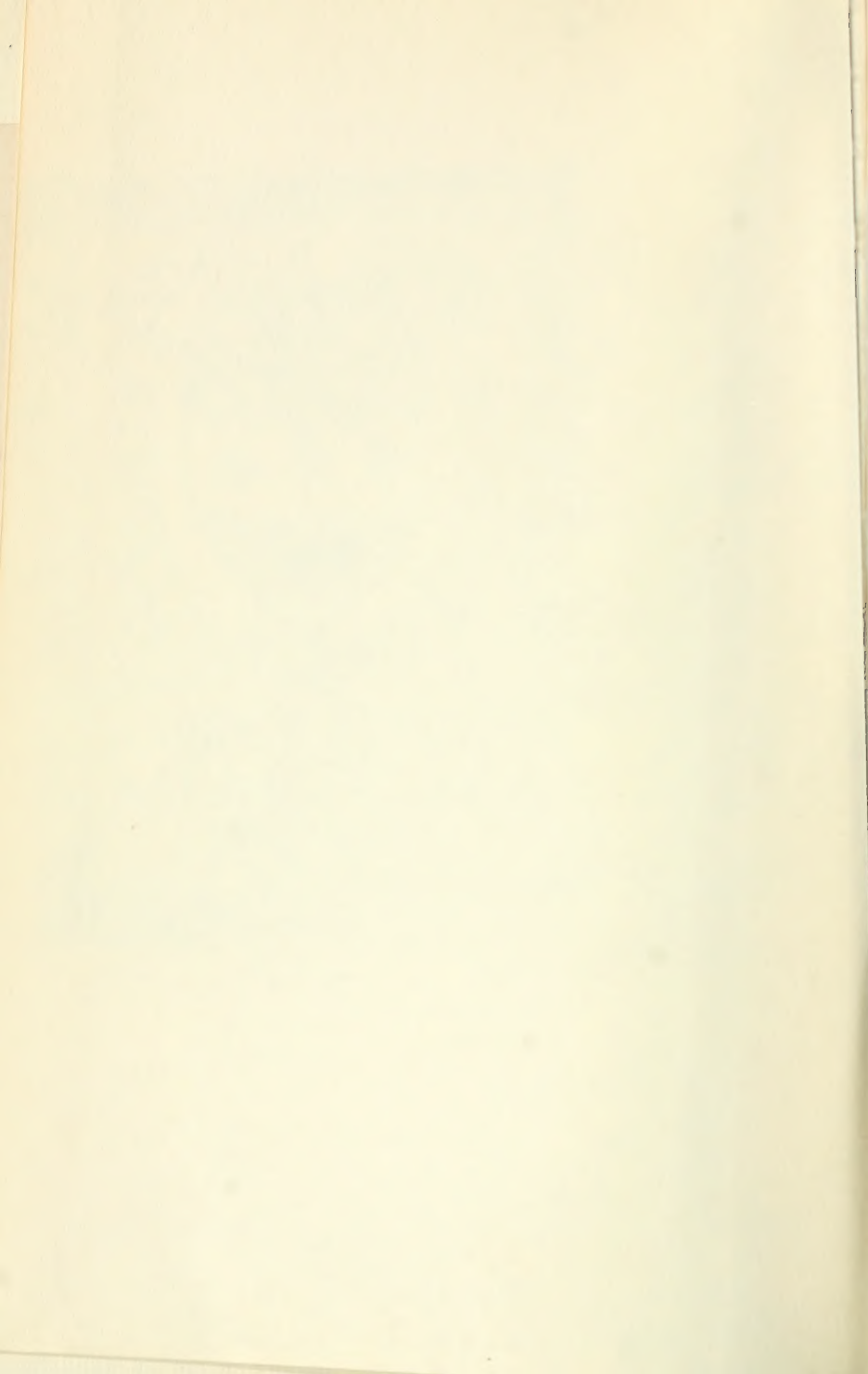


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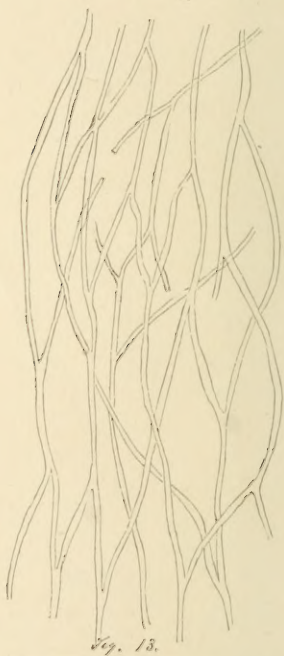
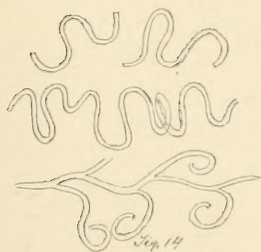
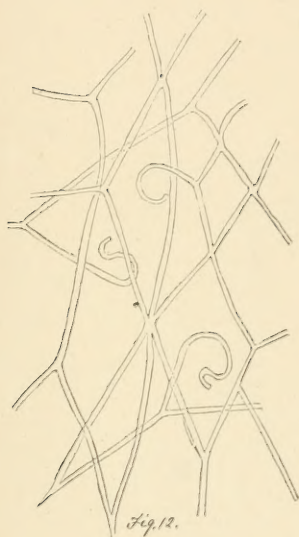
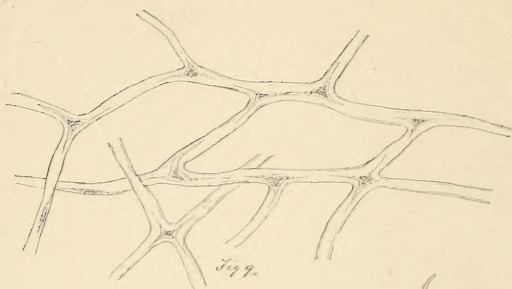




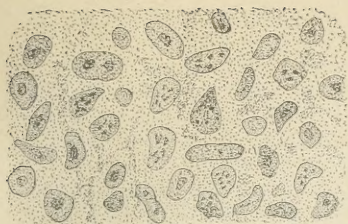




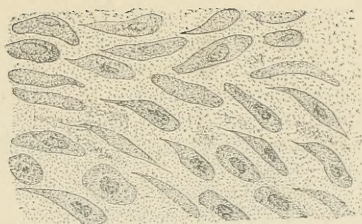




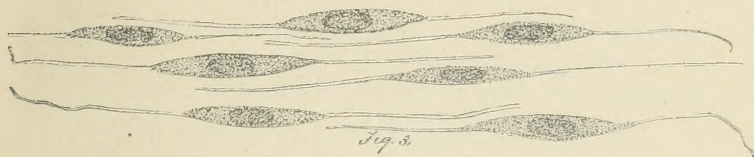




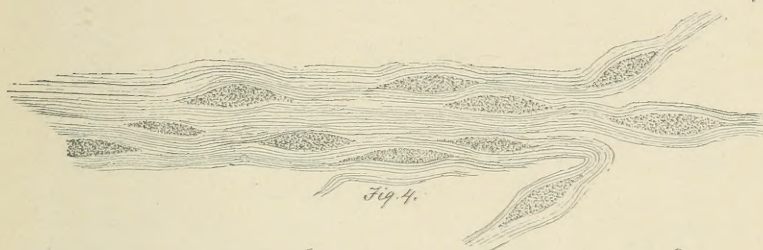
*Fig. 1*



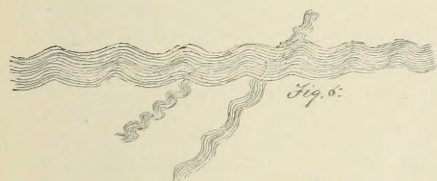
*Fig. 2*



*Fig. 3.*



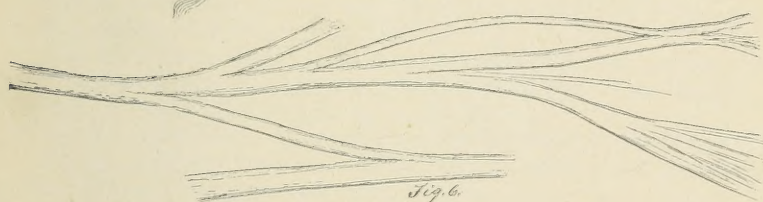
*Fig. 4.*



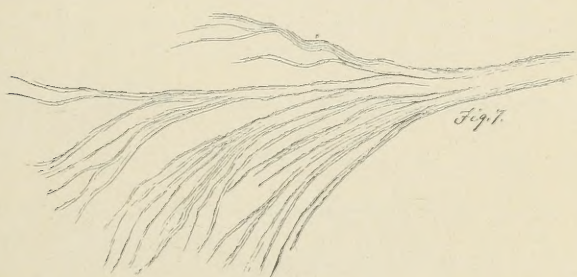
*Fig. 5.*



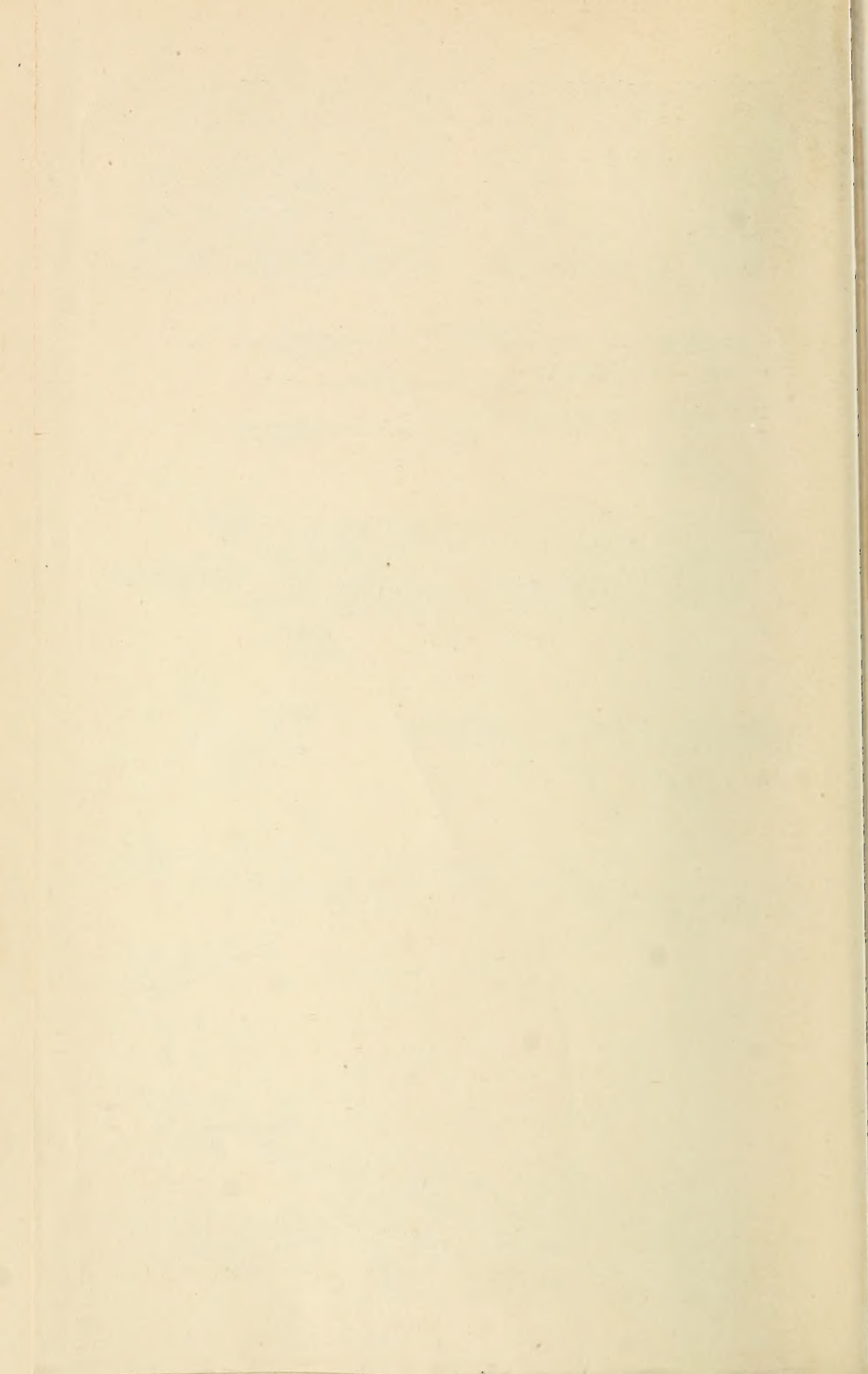
*Fig. 8*



*Fig. 6.*



*Fig. 7.*





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## ORIGINAL COMMUNICATIONS.

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### THE PERIOSTEUM AND PERIDENTAL MEMBRANES.

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#### DESCRIPTION OF ILLUSTRATIONS.

Fig. 1. Embryonal connective tissue in an early stage of development, showing the cellular elements imbedded in the ground substance.

Fig. 2. The same, a little more developed, showing the cellular elements lengthening in a common direction.

Fig. 3. The cells developed in spindle forms, with long filaments extending from either end.

Fig. 4. The developed white fibrous tissue.

Fig. 5. Older white fibrous tissue, in which the cells are no longer seen, and showing the wave-like course of the fibers.

Fig. 6. Coarse white fibers, made up of bundles of the fine, and showing the mode of division by the splitting off of a portion of the fibers of the bundle.

Fig. 7. Coarse fiber breaking up into fine fibers.

Fig. 8. Cross sections of coarse fibers showing some of their various forms.

Fig. 9. Reticular fibers, showing the mode of division and the multipolar, or irregular star forms of the cells at the divisions.

Fig. 10. Cross sections of the reticular fibers, showing some of their forms.

Fig. 11. Connective tissue cells from which reticular fibers are developed.

Fig. 12. Network of elastic fibers from the point of reflection of the mucus membrane of the lip from the gums.

Fig. 13. Network of elastic fibers teased out from elastic tendon, and showing the usual mode of division.

Fig. 14. Elastic fibers, showing their disposition to curl up when cut or broken.

Fig. 15. Cross sections of elastic fibers, showing their forms as seen in a group passing between coarse white fibers.

Fig. 16. Tissue of the dental pulp, in which the development of the cells is not followed by any considerable formation of fibers.

## PRELIMINARY.

In the study of histology there have been great advances with the last few decades. This advance has been along special lines to which attention has been strongly drawn by the results of individual effort, or in which the needs of the suffering public have directed investigation. Cohnheim and Stricker, with numerous co-laborers, have done much to unravel and make plain the formerly mysterious tissue changes which occur in inflammation. By the investigations of numerous workers the tissue forms and modes of growth of the various tumors have been made so clear, that even the young worker in pathological anatomy may readily recognize their various forms, and classify properly those that may come under his lens.

The more difficult special tissue forms of the eye and ear have been so plainly unfolded by workers in these fields that it is no longer a question as to the forms of the elements found, but the discussion is carried to the domain of the more intimate and special physiological function of individual groups of cells which are recognized by all. The very complex structures of the brain, spinal cord, and the various ganglia of the nervous system have been searched so closely that the discovery of form elements yet undescribed seems almost impossible. And as it is with these, so it is with a large majority of the form elements of the human body. And yet there are many special fields opening up for further discovery and waiting for laborers.

In this work each advance in discovery has brought with it a corresponding advance in *technique*. New and better means of bringing difficult and hidden form elements into view have been so rapidly brought forward that one who has been out of the work for but a few years will, on entering the histological laboratory of to-day, find himself confronted by apparatus and re-agents, much of which will seem new and strange; and will find that these have modified the views of tissue elements with which he had been familiar, and have brought them into bolder relief, developing finer elements of structure than had been possible by the older methods of procedure. That which had been known becomes better and more intimately known; and this better technique calls for re-working in the formerly worked out mines of his-

tological inquiry for the finding of the finer grains of information missed by former laborers.

Each field in histology seems to be worked over and pondered over anew, as new pathological factors have fastened the attention of specialist or general practitioner. This is the case whether the new factor be based upon some new fact discovered, or theory propounded; for each thought that gives promise of developing truth must be tried and tallied with the form elements with which it is associated.

It is considerations such as these that have prompted me to undertake anew the study of the periosteum and peridental membrane. Fifteen years ago I had gone over the subjects pretty closely, but at that time there seemed to be no special call for more definite information in regard to them. Upon the peridental membrane there had not been much written, and there did not seem to be much interest in the subject among the dental specialists. Since that time, however, attention has been strongly called to the structure of this membrane from several directions almost simultaneously, and an intense interest awakened. These are, first, the efforts that have been expended in the study of the destructive diseases of this membrane which was stimulated primarily by the late Dr. Riggs of Hartford; secondly, by the greater and more general interest recently felt in the correction of irregularities of the teeth, in which changes in this membrane and the relations of the parts which it unites are brought about; third, by the greater interest that has been manifested by the masses of the dental profession in the retention of pulpless teeth, and roots which have lost their crowns, and which are dependent upon the continued health of the peridental membrane under modified conditions; fourth, by the revival of the ancient methods of replanting and transplanting teeth, the success of which is supposed to be dependent, in whole or in part, upon the reconstruction of the peridental membrane, or its reattachment to the teeth, and fifth, by the singular fact that has developed of late; that a large proportion of the teeth thus replanted with seeming success, are finally lost by absorption of their roots; a matter which seems to depend upon some mal-condition of the tissues of the peridental membrane.

All of these considerations call earnestly for an intimate

knowledge of the histology and physiology of this membrane as the basis for the formation of correct views of its pathology and recuperative powers when subjected to disease or serious injury. In order that I might obtain correct views for presentation, I have gone back to the tissues themselves for information and have made a re-study of the subject *de novo*, availing myself of the new methods of procedure, and preparing such a number of sections from various sources as would seem to give every possible view of the subject. In this study it has not seemed judicious to confine my labors to the periodontal membrane, either in the study or in the presentation, but to unite with it the study of the periosteum for the purpose of having a broader field of comparison. This is at once suggested by the natural kinship of these tissues, and has been rendered the more necessary by previous views that have been entertained as to the distinctions between, or the identity of these tissues. Indeed, the relations of these membranes are such that the periosteum must be studied in order to arrive at correct views in regard to the structure and function of the periodontal membrane, as will clearly appear as we proceed. They are alike in many of their features while presenting points of sharp dissimilarity, and in the study of them in common each becomes the better understood. The task is an unusually difficult one for several reasons. First, it is impossible to obtain suitable sections for the examination of these tissues without first decalcifying the bones and teeth; for we must study them in their normal relations with the parts with which they are associated. The acids to which they must be subjected in the process of decalcification is not without its effect upon the tissue. This is injurious in a large degree, and robs the tissue of that freshness so necessary to the gaining of good views of its constituents.

Again, the selective stainings that are so valuable in histological determinations depend upon the finer chemical qualities of certain constituents of the tissues, its cells, or fibers, which cause certain of these to absorb a dye or color while others do not, thus distinguishing them. The necessary subjection to the acids in decalcification disturbs these finer chemical relations seriously, so seriously as to render the use of some of the finer staining agents unavailing, and causing much annoyance and imperfection in the use of others.



Again, in the study of most of the tissues a little shrinkage in the process of hardening for the purpose of making sections is of little or no consequence, for all being soft they will presumably shrink in the same degree, and their relations will not be disturbed; but in the membranes we are to study we have soft tissues combined with bone, and their mutual relations must be maintained. If shrinkage occurs in the softer portions these relations are disturbed and the object defeated.

#### TISSUE ELEMENTS AND DISTRIBUTION.

Before proceeding with this study it will be well to review the more elementary histology of the class of tissues to which these membranes belong; to first learn of what tissue elements they are mostly composed, and the character of these elements individually; and afterward we will be enabled to study them more intelligently in their combinations and peculiar forms in special localities.

These membranes belong to what is termed the connective tissue group, and in structure are very nearly related to many other parts; so much so, indeed, that in most of the works on histology a description of the group as a whole has been considered sufficient without separate description of the special membranes, or with a simple mention of some of the more important structure peculiarities. This would seem to be sufficient to the ordinary student of histology who often has the structures under observation, but it seems that to those who depend for their information in regard to such subjects mostly on reading, which up to the present time includes the greater number of both medical and dental practitioners, that this does not serve the purpose when attention has been strongly called to a particular one of these. If one attempts to look up the special subject of the periosteum or peridental membrane in any or all of the current histological works he will find the descriptions short and rather vague; indeed that the literature of the subject is very incomplete. Yet if these descriptions, short as they are, be taken together with a good practical knowledge of the histological characters of the elements of the group of structures to which they belong, a comprehensive idea of them will be gained. Still it must be admitted that more especial de-

scription is needed in the light of the recent interest awakened in the peridental membrane. Furthermore, additional studies of the periosteum, especially from the pathological standpoint, are very much needed, and these should be preceded by further studies of regional histological characters, especially differences in the internal layer and the varying modes of its attachment to the bone.

This large group of *fibrous membranes* is usually made to include structures which, though seemingly widely separated, are closely connected in their structural peculiarities. That is to say, though they may seem to serve widely different purposes, or, better, are connected with widely different organs, they are all emphatically *fibrous* in their structure, and differ only in the peculiarities of their fibrous arrangement, in preponderance of the white or elastic varieties, and in the number and character of the cells which may be contained within the fibrous network. Again the purposes subserved by these different fibrous membranes when closely studied, are found to be as similar as their structure. They are all *coverings* for other structures, and form their connections with neighboring parts, and, while in themselves they are indifferent tissue, they are generally made subservient to functioning tissues by conveying bloodvessels and nerves, and holding in some part of their network embryonal cells for the supply of the needs of the tissues which they envelop or connect.

#### DEVELOPMENT.

The connective tissues are developed in a soft transparent homogeneous material which has been known as *ground substance*, *basis substance*, *gelatinous substance* or *matrix*. This material is in large proportion the primitive or developmental state of this tissue, both in the fetus and in the early development of it as it occurs in the healing of wounds in the adult. Within this matrix the cells lie imbedded, and in this state it is usually termed gelatinous tissue. In this matrix the cells may exist in such great numbers as to obscure the ground substance, or they may be but sparsely distributed, and their development may be studied step by step as the adult tissues are assuming their forms, and certain of the fibrous elements derived from them. In a few of the organs of the adult this tissue seems but partially

developed, notably in the dental pulp (see fig. 16), the ground substance remaining in large proportion, and the cells being developed with but slight inter-mixtures of the fibrous elements. These have been termed myxomatous tissues. But generally the tissues undergo such development as to completely change its apparent character. The ground substance disappears more or less completely, giving place to fibers of various forms. Among these, two varieties, differing essentially the one from the other appear, known as the white and the yellow, or the inelastic and the elastic fibers. The former is in much the larger proportion, and its development is traced very directly from the primary cells found in the basis substance.

In fig. 1, I present an illustration of the tissue taken from beneath the epithelium of the abdominal wall of a human fetus in the sixth week, and in fig. 2. a specimen from the same locality from a little older fetus. (The umbilical cord is usually recommended for obtaining views of embryonic tissues.) In fig. 1, the cells are round, oblong or irregular in form and the cell contents slightly granular, and presenting either no clearly defined nucleus, or it appears but faintly, or at least it has not the prominence seen in the epithelia. In fig. 2, the cells are generally assuming a lengthened form in a common direction, and some of them present pointed extremities, yet no true fibers are present.

In fig. 3, the cells are illustrated in a more fully developed state, in which the points are drawn into long slender filaments. These may often be found in the subcutaneous tissue of the fetus, lying side by side and end to end, with their filaments joined together, apparently, in such relative position that the full length of the filaments of two cells lie side by side, as in the two lower cells in fig. 3. Sometimes these fibers seem to be fused into one. As the development proceeds this appearance is changed by the development of numerous fibers between the cells; the cells meanwhile becoming smaller. As to the precise mode of the formation of these fibers there is still some difference of opinion among histologists. The one view regards them as developed from the ground substance in the immediate neighborhood of the cell, and the other that the fiber is shed out from the cell itself—is the direct product of the cell. One can hardly

trace this development as it proceeds without feeling a conviction that the fibers arise, at least, under the immediate supervision of the cell. This fibrillation proceeds until the ground substance has disappeared and given place to a fibrous tissue which presents the appearance represented in fig. 4. As the tissue grows older the cells are separated more and more widely, and become smaller, until finally in the older tissues they are represented only by thin scales lying among the fibers. Many, and often almost all of them, disappear entirely. This disappearance is especially noted in the more compact fibrous tissues, especially the tendons. In the developed tissue the fibers are generally not straight unless put upon the stretch, but pursue a wave-like course, as shown in fig. 5.

These fibers are very small, and are usually gathered together in bundles in which the individual fibers may seem to have but slight connection with each other, and form broad, flattened, wavy belts of loose texture running parallel or crossing each other in various directions, as in the peridental membrane, or may be formed in close, compact bundles, that assume the form of large fibers (coarse fibers—fig. 6), running nearly parallel, but interlocking with each other, as in the outer layers of the periosteum, or may cross each other in every conceivable direction, leaving large inter-spaces or meshes (*areolæ*) between them, as in the areolar tissue, or may be compacted into a dense, tangled mass, as in the gums. In some of these forms the fibers are cemented together into bundles by an intervening substance.

The individual fibers are never seen to branch or divide, and we may often search the tangled nets of the coarse fibers or bundles in vain to find them dividing, but in some localities these are found abundantly, as in the *gingivæ*. These branchings are, I believe, always effected by the splitting off of a portion of the fibers, which form a bundle, or coarse fiber, as represented in fig. 6 (from a silver nitrate preparation). The smaller bundles which split off in this way sometimes join and form a part of another coarse fiber, and by these divisions and junctions form nets through which fibers running in different directions may pass, or they may inclose cellular elements. This kind of branching occurs perhaps only in the softer forms of the coarse fibers. Occasionally, when the tissue is passing from a more firm to a looser



texture, the more solid, coarse fibers are seen to break up and spread out in finer fibers, as represented in fig. 7.

These coarse fibers are seldom round. They are often seen to form bundles interlocking with each other; often in compact masses. These, when seen in cross sections, present exceedingly irregular forms and sizes (fig. 8).

Fine sections of the tissue of the gums, when delicately stained with silver nitrate or osmic acid, give a great variety of views of these. In this position the coarse fibers are very closely interwoven, and every field will present cross sections differing in outline and configuration of the cut ends of the fibers.

In some positions, however, we find branching fibers of a different type. The cells, in their development, instead of assuming the tapered spindle forms, with processes at either end, present irregular star forms, sending out three or more filaments, as represented in fig. 11. In some positions these cells are seen to remain in this form without further fibrillation, as in the dental pulp; but in others, notably in the framework of the lymphatic glands, they form by their fibrillation intimately branched network, as represented in fig. 9. These are known as *reticular* fibers, and form reticular tissue. In these the star-shaped cells are seen at the junction of the branches, and in the mature forms seem to lie upon them as a flattened scale, which may be removed by brushing.

These fibers, like those previously studied, are not round. The shapes, as shown in cross sections, present indefinite variation, with a tendency to elongated forms, as illustrated in fig. 10, showing the fibers to be irregularly flattened.

*The development of the yellow or elastic fibers* has not been traced so successfully as the white, and there is still much uncertainty regarding the manner of their origin. Krause regards them as being developed from cells in a manner similar to that of the reticular fibers, except that elastin is formed instead of the glue-giving substance of the white fibers. Boll and others have also traced their formation from cells. But a large number of those who have examined the subject have failed to trace the development of these fibers from cells.

Others have thought that elastic fibers are developed by the formation of granules of elastin in the basis substance, and the

union of these, end to end. The same material is also found in the form of very thin, elastic, and apparently perfectly homogeneous membranes, which are supposed, according to this view, to arise by the union of the granules of elastin in the form of sheets, which become united into a continuous membrane.

The elastic fibers are found in almost all parts of the soft tissues of the body, except the epithelial structures. A few ligaments are composed of elastic fibers almost pure as the *ligamentum nuchæ* of the ox, and *ligamentum subflava* of man; but in most places they are but scantily distributed. Wherever found, they present the same characteristic form of network. The fibers divide dichotomously and form junctions freely, and in this form are interwoven with the white fibers of the areolar tissues and the fibrous membranes; and wherever we find these of loose texture, we find large intermixtures of the yellow fibers. I have represented in fig. 12, a portion of these nets as seen at the points of reflection of the mucous membrane of the lips from the gums. It is a little unusual, in the fact that it represents nodal points from which several fibers radiate, while usually they divide only dichotomously, as represented in fig. 13.

The point of reflection of the mucous membrane from the gum tissue at the labial side of the teeth is a very good point to study them. Here the tissue is of a very loose structure, and the mucous membrane is united to the parts beneath by a fine network of elastic fibers. Carmine or hematoxylin stainings, mounted in glycerine, serve the purpose best when the networks are sought; but for examining cross-sections of these fibers as they occur entwined among the coarse, white fibers, osmic acid or silver nitrate stainings, mounted in balsam, are better (fig. 15). In fig. 13, I have represented the fibers as they appear when teased out from elastic tendon.

Elastic fibers, like the other varieties, are seldom round. In fig. 15, I have illustrated these forms as seen in cross-section in a silver nitrate staining in a group noticed passing between some coarse white fibers. Elastic fibers show a peculiar disposition to curl at the ends when cut or broken, which I have represented in fig. 14, giving examples taken from the position mentioned above. Here we will often see the short pieces cut off in thin sections, very much curled.

The cellular elements of the fibrous membranes, farther than what has already been described, are mostly peculiar to the position, rather than to the fibrous tissue, and belong to the tissue invested rather than to the fibrous investment, and their consideration belongs to the regional descriptions. The leucocyte is found among the meshes of these membranes very generally, and other cells have been described as especially belonging to them; particularly a round, nucleated cell larger than the leucocyte, and some forms of the branched corpuscles. These latter appear abundantly in some positions, notably in the membranes of the eye. It seems probable that some of these are developmental types destined for some use in the neighborhood, rather than belonging specifically to the connective tissues as such. There are, however, young cells present undergoing development in perhaps all of the tissues of young animals, and possibly in the old, that, in the regeneration or augmentation of the tissue, pass through the phases already described. And it is also probable that many of the peculiar forms seen occasionally are cells that have become stationary, have begun to retrograde, or have, from peculiarities of environment, assumed modified forms.

Fatty tissue consists of connective tissue cells, filled with oil, which usually lie heaped together in little groups, or may form great masses by aggregations of these. It is most abundant in areolar tissues of loose texture, but is occasionally found in the fibrous membranes.

The fibrous membranes act very largely as a depot of supplies to the tissues which they invest. They bear the bloodvessels and nerves, and in some cases they receive, partially, as in the periosteum for the bones, and in others wholly, as in the peridental membrane for the cementum, the pabulum from the blood to be transmitted through their meshwork to the point of assimilation.

The local characteristics of the individual membranes are continually modified by the deflection of their fibers this way or that, to give place for the passage of bloodvessels and nerves, and for the investment of them. These deflections are often of such a character as to mislead the observer if only one or two sections are examined.

In these forms, and inclosing in the meshes formed by its fibers, varying numbers and forms of cellular elements, this tissue

is distributed throughout the body. It is continuous everywhere, and has been described by different writers under the utmost variety of names according to the local peculiarity of the tissue and the positions in which it is found. It is found under the mucous membranes—submucous tissue; under the serous membranes—subserous tissue; under the skin—subcutaneous tissue; and about the bloodvessels it forms a continuous membranous sheath, or investment, and in this way gives them support and protection. In the same way it forms the investment of the nerves—neurilemma; and incloses each muscle in a distinct sheath—myolemma; and dipping in between the muscular fibers surrounds each one individually—sarcolemma; and serves to connect them with their tendons, or with the periosteum. It invests the glands, holding their lobes in position, and following the ducts into the substance of the gland forms an investment for each lobule, and within this substance the bloodvessels that supply the gland ramify. It forms the support for the organs of the hollow viscera—peritoneum—pleura; it invests the brain—dura mater—arachnoid membrane, and forms the investment or matrix for its functioning cells—neuroglia; it incloses the heart in a closed sac—pericardium, and forms the investment of the eye—sclerotica. In strong membranous sheets—fascia—it binds down the muscles, and holds them in position; it forms the investment of the bones—periosteum—and serves to attach the roots of the teeth to their alveoli—peridental membrane. In a still more condensed form in which the fibers lie parallel with each other, it forms the tendons which connect the muscles with the bones, and the ligaments which connect the bones together.

This tissue also stands in very close developmental relations with still other, and seemingly very different tissues. Cartilage and the bones are developed directly from a connective tissue matrix, and seemingly the one is developed from the other, though close examination seems to reveal the fact that the development of the one displaces the other in whole or in part. The bones, at least, are developed from specialized cells—the osteoblasts, which seem endowed with a special bone forming power. These cells are, however, developed from connective tissue cells, or at least from cells that, from all that has as yet been learned of them, are the same as the embryonal connect-



ive tissue cells. This point will be examined more particularly later.

It appears also from the teachings of comparative histology that one of these tissues may be substituted by another of equivalent value. That which in one animal appears as ordinary connective tissue may in another be of quite a different reticular type; and that which is represented by cartilage in one may be substituted by bone in another. These changes are often remarked also in the developmental stages of the same animal. Thus in mammals the greater part of the skeleton is first represented in cartilage, and afterwards replaced by bone, while a few of the bones, as the cranial, are first represented as fibrous membranes, in the midst of which the bones are formed. This is called the inter-membranous formation of bone. Three modes of the formation of bone are usually recognized; the inter-cartilaginous, inter-membranous, and the sub-periosteal.

Further than this these tissues have other relationships from a physiological point of view. Their significance in the action of the healthy body is of a more subordinate kind; though they make up an enormous proportion of it. They represent, as is usually said, tissues of lower vital dignity (Frey), and seem in a degree subordinate to the more proper functioning tissue for which they form an extended framework in the meshes or cavities of which the muscles, vessels, nerves, gland cells and organs lie imbedded.

The name then of connective tissue seems to be entirely appropriate. If we farther reckon the muscular tissue with this group, which seems proper according to most histologists from its developmental relations—though it is widely specialized,—it may aptly be termed the *tissue of support and motion*, while the tissues of the epithelial type constitute the *tissues of function and protection*.

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TO BE CONTINUED.

## THE "GERM THEORY" IN ITS RELATION TO DAILY PRACTICE.

Read before the Odontological Society of Chicago, October 22, 1886,

By GEO. H. CUSHING, M.D., D.D.S.

It has been my hope since I had the honor to read before this society a paper under the title of "The incipencies of diseased conditions" to be able to complete the series of experiments then hinted at, which should give some definite results as to the difference in conducting power of various materials used in filling teeth, but I have found it impossible to perfect an apparatus or method which seemed likely to be satisfactory, so that the consummation of this design must be left for future experimentation. Not being able to present a continuation of the subject as I had proposed, I thought that a consideration of the so-called "germ theory" in its bearing upon daily practice, might be timely, and would appropriately come under the above head.

You will perhaps remember the remark of Dr. Atkinson which I quoted as my text, viz., "It is the first impression that sets up the deflection which results in that which is called disease." I think it possible in considering this subject that we may come very near to discovering one of the incipient causes, certain of which, I stated, did lie within our vision, and I hope to stimulate thought in the right direction that may eventuate in the discovery of the desired prophylactic.

I need hardly advert to the fact that the paramount desire of the thinkers of the profession is to arrive at the cause or causes of decay, nor to the further fact that no one of the theories that has yet been propounded, viz., the chemical, the chemico-

vital, the inflammatory, or the germ, has been or is satisfactory as considered by itself. But the recent investigations in the line of bacteriology seem to give larger promise of ultimate success in determining the potent factors in the destructive processes, the repair of which so largely occupies our attention, than any previous investigations in other directions have done.

A brief resumé of the various theories is necessary to the proper presentation of the subject.

The chemical theory holds that decay is produced solely through chemical action, regardless of other conditions. The chemico-vital—that chemical action is the immediate cause, but is largely influenced by varying vital conditions, or perhaps it would best be expressed by saying that the power of resistance to the action of destructive agents is so much lessened at times, that chemical action takes place, which would not occur under conditions of perfect health.

The inflammatory theory claims that caries is the result largely of retrograde metamorphosis, the sequence of true inflammation of the tissues of the tooth, while the “germ theory” maintains, as expounded by some, that decay is solely due to the action of micro-organisms, and, as held by others, that though something may be due to other causes, yet the micrococci are the most potent factors in the destructive process.

It is almost certain, it seems to me, that all of these theories are entitled to consideration in determining the causes of caries.

I presume no one will attempt to deny that the immediate disintegration of tooth structure in the process denominated caries, is caused by chemical affinity, chiefly, if not entirely, by the affinity between certain acids in their nascent condition and the lime salts of the substance of the tooth, but there has been great diversity of opinion as to the origin of these acids. Now if we could determine their source we might devise the means of preventing their formation, or of counteracting their influence. This statement would seem to imply that the chemical theory must practically be the one to be dealt with.

We must, I think, recognize as a chief predisposing cause, congenital or acquired imperfection in structure, and as the first active influence preceding disintegration, a lowering of the tone of the system, reducing the power of vital resistance while

inflammation (to whatever degree that may extend) may further render susceptible the tissues of the tooth to the attacks of chemical agents.

Without some of these antecedent conditions, in very many cases there would be no caries, though the acids might be formed about and upon the teeth in almost unlimited quantities; but granted that all those conditions most favorable to the advent of caries were present, it is evident that without the acids there could not be decay at all. Now these antecedent conditions are more or less remote and very difficult to deal with,—the constitutional treatment which should place them under our control having not yet been devised—but where we come to the acknowledged immediate cause of tooth disintegration—the acids—we are confronted with an enemy that seems more tangible than any other, and are seemingly brought to the point of dealing with this question as though, as I said before, the strictly chemical theory were the true one.

And now comes the germ theory to further confuse us, or else to throw light upon previous obscurity. That micrococci play a very important part in this matter I am fully convinced, and am inclined to believe that the part they play has been quite satisfactorily demonstrated, at least sufficiently so for the purposes of this paper.

To determine the source of these acids must of course be the first step toward the suggestion of the remedy.

Dr. Geo. Watt, who is probably the strongest advocate of the absolute chemical theory, and who regards the mineral acids as chiefly responsible for the destruction of the teeth, says on p. 466 of *The Ohio State Journal of Dental Science* for October, 1884: "Liebig and other standard authorities have told us that in the presence of free oxygen ammonia is always oxidized into nitric acid and water." . . . . He further says: "If we get a fragment of lean meat or other nitrogenous food between the teeth and allow it to remain there, . . . it will putrefy, and if it does, ammonia will be one of the results, and as oxygen is always present this will be oxidized, and an atom or more of nitric acid will be formed, and in contact with the teeth.

"However much of it may combine with ammonia, some of it must combine with tooth substance. After the enamel has been



removed, the piece of food is not necessary to keep up the process. The organic matter of the dentine answers quite as well, and another supply of ammonia is formed, to be oxidized as before into nitric acid, which exposes more organic matter, and thus the cavity gets deeper and deeper."

If we accept these premises as correct we see portrayed a condition which must be almost universal and continuously present, because the decomposition of particles of nitrogenous food must be perpetually going on in the mouths of a large proportion of civilized men, and the consequences described by Dr. Watt must certainly follow. Without some corrective measures, these conditions would soon render toothless the large majority of mankind, were it not for the power of resistance through so-called life force which has before been alluded to.

I am forced to the conclusion then, either that the power of resistance resident in the economy is far greater than its most strenuous advocates have ever claimed, so far as I know, or else that the chemical reactions stated by Dr. Watt do not as certainly occur as he holds must be the case.

Another fact which must be patent to all observers of extended experience seems to controvert the position maintained by Dr. Watt as to the source of the nascent acids in the mouth, and that fact is the frequent recurrence of decay in mouths that are kept unusually clean, where deposits of nitrogenous food are never left to putrefy, and thus furnish the ammonia to be oxidized into nitric acid. It is true that he refers (in an article in *The Ohio State Journal of Dental Science* for August, 1886), to other sources of ammonia in the mouth, than the putrefaction of nitrogenous matter, but in many of the cases of recurrence of decay to which I refer, there is no evidence of the presence of ammonia from any source. If this is true, we must seek further for the origin of the acid that works this particular mischief.

Another fact which seems to throw doubt upon Dr. Watt's position must have been obvious to all of us, viz., that in many mouths which evidently receive no care, where the teeth are never brushed, and the particles of nitrogenous food are continually present in considerable quantity and constantly undergoing decomposition—so that nitric acid must be constantly and continuously forming—there is little or no decay of the teeth.

Now what has the study of bacteriology done to throw light upon this subject? The investigations of Miller and Black have, I think, conclusively established the fact of the existence in the mouth of certain micro-organisms whose waste products are always acid; and these organisms are found in greater or less number in all mouths. From Dr. Black's experiments, if I understand him correctly, it is found that these micro-organisms colonize and develop most frequently between the teeth and in their fissures, and that under favorable conditions (which, perhaps, are not yet clearly understood) they multiply with great rapidity, and are constantly giving off their waste products in the form of nascent lactic acid in direct contact with the tooth. Now here we may have ample explanation of the cause of decay in such cases as can not be traced to nitric acid, as the product of the oxidation of ammonia. It would seem, then, if these were all the conditions surrounding the presence of these micro-organisms in the mouth, that as far as the mischief which they occasion is concerned, the remedy might easily be found in some germicide that should at least render them inactive. But, unfortunately, it has been demonstrated by Drs. Miller and Black that some of these micro-organisms whose waste product is acid, after becoming attached to the surface of the tooth, cover *themselves* with a gelatine-like substance, which protects them in great measure from the action of germicides, as well as rendering it difficult to dislodge them by ordinary methods of cleansing the teeth.

Black has also demonstrated that in order that these *streptococci* shall form acid they must be fed on sugar or starch, and in order that they shall produce the gelatinous material they must be surrounded at the outset with an alkaline medium.

Now I am well aware that the study of the micro-organisms of the oral cavity, is but in its infancy, and scientific observers like Miller and Black do not jump at conclusions from a few established facts, or guess at the results which can be assured only by long and patient investigation.

But I believe I am safe in assuming that the facts I have recorded have been established, and if so, I ask does not the germ theory have a direct relation to our daily practice?

Let us see if it does not. Discarding the consideration of the

source of acids in the mouth as claimed by Dr. Watt, or assuming (which I think we are fully justified in doing) that the fungi are by far the most prolific sources of those acids, do not the demonstrations that have thus far been made furnish suggestions that should tend to establish a more scientific method of practice, which must, if followed, result in greater benefit to our patients.

I understand Dr. Black's researches to establish the fact that there are some acid producing fungi found in the mouth that do not protect themselves with the deposit of gelatine, while those that do so protect themselves, can only do it under favorable conditions, *i. e.*, in an alkaline medium. This may not always be present, and the organisms may then go on producing acid, and yet be within the reach of germicides. If this is so we should be able to find some germicide that would be safe in such strength as might be requisite to either destroy or render inactive these parasites, and which would not be disagreeable to the taste. We have in mercuric bichloride an agent efficient and not disagreeable, but its poisonous properties render it unsafe to use, while among the other well-known antiseptics there is not one that I am aware of, that has not some fatal objection to its daily and frequent use. There is, however, an agent to which attention has recently been called, from which we may hope to realize the needed combination of properties—efficiency, safety and an agreeable, or at least not disagreeable, taste. This is *hydronaphthol*. If what is said of it in the review by Geo. R. Fowler, M.D., is true, it meets all the indications.

He claims it to be “effective in arresting the development of the bacteria in the proportion of 1 to 6000,” and that it “failed only when the 1 to 8000 solution was reached.” He further says it is absolutely non-poisonous, in any proportion, and is not disagreeable in taste or odor.

Now surely, if we have such an agent as this, we can by insisting upon its regular and frequent use, lessen materially the extent and frequency of decay. But granting that we succeed in rendering inactive the germs referred to, we still have to deal with those that protect themselves against germicides by the gelatinous deposits. It is to be hoped that some solvent for this may soon be found, if none is at present known; but whether there is or not, our duty as practitioners is very plain, in view of



the facts presented, and that is to insist as we never have before done, on the nearest approach to perfect cleanliness that is attainable, and in view of the fact of the difficulty of removing the gelatinous masses, I think patients should be instructed to use the waxed floss silk in connection with powdered cuttle bone. The regular and frequent use of these means would certainly result in great advantage to our patients.

The fact demonstrated that these organisms require sugar to enable them to produce acid should lead us to insist upon a limited use of confections, and especially upon a thorough cleansing of the teeth after they have been eaten.

These are suggestions that the conscientious practitioner can not ignore, and the more he thinks of them the more important they will appear, especially as they are emphasized by his daily experience, which shows him how imperfect sometimes are the results of his best efforts at the chair, when but feebly, or not at all supplemented by that thorough care on the part of patients, which alone can ensure the greatest benefit. The suggestions of this paper have been made not only to impress upon our minds the necessity for renewed and increased vigilance in practices already well understood theoretically, but to stimulate thought and work in the direction indicated, of discovering reliable means of prophylactic treatment.

We owe it to such men as Miller and Black to do our utmost to lighten their labors. We are too prone to wait for others to do the work while we hope to reap the benefits.

The line of investigation which Dr. Black and others have entered upon, is one the end of which no man can foresee: they can not turn aside from the proper course of their investigations at every query or suggestion and if we wait for them to tell us what to do, in view of what their investigations shall have established, we shall be guilty of an unpardonable neglect.

The investigations I have suggested, it seems to me, are quite possible for us to make, if not individually, certainly by the assistance of chemical experts, and we shall not be doing our duty as professional men unless we make the endeavor.

If the work proposed in the line of search for prophylactics be earnestly pursued and the few practical suggestions here offered were generally acted upon, great benefit would unquestionably



arise, for there certainly would follow a material decrease in the destructiveness of dental caries.

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### GOLD FOIL.

BY W. GEO. BEERS, L.D.S., MONTREAL, CAN.

I often think it would be a great boon to the profession if some earnest practical operator would undergo an apprenticeship to a gold-beater, and discover for us a secret he might afterward reveal—why gold foil, and all gold, exposed even in books and bottles, becomes hard when annealed; and after being kept for some time after beating, loses its cohesiveness. These secrets of gold making ought to be known to us. It is not likely that any of us want to go into the business, but we would handle our material better if we knew how the cohesiveness is best obtained and retained. I do not refer to the effect of the atmosphere, or the moisture of the breath upon gold, or the effect of handling with the fingers; keeping it in the vicinity of volatile fluids, of iodine, etc.; but to the actual condition of foil itself when kept clean, and removed in a cleanly way, when one frequently finds it impossible to work gold he has always been in the habit of using. Several times I have examined such foil under the microscope, and it appeared to me as if the position or polarity of the particles had undergone a perceptible alteration, and this only appeared in gold which, usually controllable, had become hard and unmanageable. Would it be of any advantage to pass a current of electricity through the gold foil one has to use each day? I lately tried this with some amalgam previous to mixing it, but can not say that I noticed any difference.

Whatever defenders of gold foil and malleting may say, we ought to obtain a plastic gold or a permanent plastic white filling. Some practitioners are fortunate enough in governing their patients, so that very large gold fillings are rarely necessary, but everyone wears out much vital force in prolonged operations that can not be the best that ought to be done for the patient.

There seems to be a prejudice against all forms of gold but foil. Why? I believe we can preserve the peculiar advantages of crystal gold, and of certain forms of Williams pellets better than we can in any other preparation of foil. Is the paper in which foil is

booked the best material to keep it in? Would it be any better to keep it between sheets of gold-beater's parchment? There is a velvety softness in freshly beaten foil, which you can not keep, and which you can not get by annealing at your lamp.

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### ORAL SURGERY

Prof. Brophy's Clinic at the Chicago College of Dental Surgery, Tuesday, Oct. 12th. Reported by Mr. J. R. Pagin of the class.

Mrs. W. aged 50. Nationality, Irish. Residence, Chicago. General health good.

*Gentlemen*.:—The patient before you comes to be relieved of a swelling in the region of the hard palate, which, she informs us, was first observed six months ago.

An accurate history of the development of the growth we have not been able to obtain.

On examination we find a tumor extending downward from the right side of the hard palate and half filling the arch.

The phenomenon here presented is not unlike that to be observed when pus from an alveolar abscess at the lingual root of a molar tooth, burrows its way through the bone and separates the periosteum from it, thus partially or completely filling the arch. Carefully examining the teeth we find gold fillings of medium size in the second and third left superior molars, which teeth possess healthy living pulps; and as an alveolar abscess must depend on a pulpless tooth for its origin we can not attribute this condition to that cause. Moreover, the palate is enlarged, as you see, on the side opposite the filled teeth.

The patient has a very strong and healthy set of teeth and we can not therefore associate this lesion with dental alveolar abscess.

The growth yields slightly to pressure; it is not osseous. The capillaries of the mucous membrane over the tumor are greatly dilated. Let us introduce the exploring needle,—this instrument you should always employ in such cases before making an incision. The needle does not enter easily, the tissue is tough, it is fibrous. It does not contain pus or other fluid. A little

blood only escapes, and this is the natural flow from the tissues wounded by the needle.

Gentlemen, our diagnosis, is complete. We have here, unquestionably, an encapsuled fibrous tumor, benign in character.

We will etherize the patient and remove it. The patient is now under the influence of the anæsthetic and we will proceed. Dividing the mucous membrane I come in contact with the hard growth beneath. I reflect back the membrane and now observe the glistening fibrous tissue which forms the outer wall of the tumor. I pass a tenaculum into the growth and by the use of the periosteotome, the mass is enucleated. It is about three-quarters of an inch in diameter. I pass it around so that you may all examine it. Observe the well defined fibrous wall, how smooth it is and how it glistens in the light, such is the appearance of an encapsuled fibrous tumor, and such a tumor you have before you.

When we come to the consideration of the subject of tumors in our didactic lectures I will explain to you more minutely the characteristics of fibrous tumors and the various phenomena which they present.

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## PROCEEDINGS OF SOCIETIES.

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### CENTRAL ILLINOIS DENTAL SOCIETY.

PEORIA, ILL., OCTOBER, 12, 13 AND 14, 1886.

ANNUAL ADDRESS BY THE PRESIDENT, DR. C. R. TAYLOR, STREATOR, ILL.

*Gentlemen of the Central Illinois Dental Society:*—At the present time, it requires a great deal of egotism in the president of a dental society to willingly and from choice submit an annual address. For as far as I have been able to see there is very little legitimate virgin soil which remains uncovered by previous addresses. The propriety of making it obligatory for the presiding officer to deliver an annual address is questionable. With few exceptions, this annual review of old subjects is not profitable to the society nor of much glory to the one who makes it.

It may not be wise to entirely dispense with the annual address, but perhaps it would be better to leave it optional with the president, for Dr. Moody's at Bloomington last year, and Dr.

Newkirk's at Pontiac, and Dr. Marriner's at El Paso, show that the annual address is not necessarily an unmixed evil.

It is my desire to submit a few practical questions that concern the welfare of this society and each member in it. It is with individuals as with societies; the association, in time, comes to be estimated by what is done and said at its meetings.

This society should have a high and noble unwritten constitution or ideal of excellence. Each member should be anxious to raise himself and others to excellence in the profession, by a willingness to do his full share in making the society a success. Also, there should be a real social feeling among all the members. Let there be no political wirepulling as to who shall be the officers of the society; the methods adopted in some of our societies, in selecting officers are both disgraceful and injurious to good fellowship.

The intelligence of this society is a sufficient guide in the annual selection of its officers, without previous manipulations. And let us always remember that this society is not the place for the discussion or vindication of personal grievances. The work to be done by this society should be the giving of practical expression to scientific ideas—practical demonstrations, rather than special scientific investigation. To most of us the genius and talent for original investigation is not given, but our daily duties demand of us the best practical application of scientific principles.

The three means of education in dentistry at the present time, are text books and journals, the colleges, and societies. Our text books, in the main, are not standards of authority, they are rather books of history of the methods of the past showing the steps by which dentistry has attained its present state. Our journals are the sensitive plates that register the lights and shades of the growth and evolution of dentistry. Our colleges are the places where the students of dentistry study our historical text books, and the professors are largely engaged in correcting the teachings of the text books and imparting the latest theories; the student in the meantime gaining the best possible practical experience at the chair and in the laboratory of the colleges. Our dental societies are the post-graduate colleges, where, in a disjointed way perhaps, methods and theories are advanced and discussed.



Owing to the progressive or nomadic tendency of our theories it is impossible for our text books to remain authoritative for any considerable length of time.

Of late there has been much written and said as to what relation we hold to the medical profession; some are sensitive because we are not recognized by the medical profession as medical men, and others feel an itching desire for some particular title rather than to have what that title ought to imply. What is most needed is, a course of studies in and out of college that will in and of itself give its possessor, with or without a title, the position and recognition desired.

There are hundreds who, as "Doctors of Medicine," or "Doctors of Dental Surgery," are like the Strasbourg geese, —stuffed for the market; and such will be the condition of things as long as our colleges are institutions of financial gain and personal glory.

The question as to the advisability of taking students into our offices to study dentistry is of enough importance to demand our attention, and a thorough discussion of this subject here might be of much benefit.

In conclusion, permit me to suggest that each member of this society may feel perfectly free and at liberty to enter into a full discussion of all the papers read, so that the secretary's minutes will show that the discussions have not been confined to three or four individuals, however learned.

#### DISCUSSION.

DR. MOODY did not think the practice of taking students into the office, a good one; believed the colleges much prefer that their students come fresh from school than to have them first inoculated with the ideas of individual dentists.

DR. CALL, in looking at the matter from another point, believed that young graduates are often unfit for practice, and should study in an office for several years after graduation.

DR. MCINTOSH insisted that the foundation should be laid in a preliminary reading before attending college; that the student when beginning his first course should be prepared to understand what the professors are teaching.

DR. TIBBETS spoke of the advisability of having regularly a

president's address. He said that as medicine is empirical and dentistry practical, that the most of our time ought to be devoted to clinics.

DR. FITCH had noted the difference in ability of preceptors to impart knowledge, some being able readily to do so, while others, perhaps more highly educated, are utterly unable to teach others what they know.

DR. MOODY, in closing the discussion, stated, that whatever good legislation has done, may be credited to the influence of dental societies. "Going to college first, and studying in an office afterwards" is a good maxim. He agreed with the president in favoring good-fellowship, and that if we avoid the formation of rings, the societies success was assured. Subject passed.

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### OHIO STATE DENTAL SOCIETY.

TOLEDO, OCTOBER 26, 27 AND 28, 1886.

REPORTED BY W. H. WHITSLAR, M. D., D. D. S.

This being the second annual meeting of the reorganized society, nearly the whole of the first day was devoted to the transaction of miscellaneous business and the election of new members. However, at the afternoon session Dr. C. R. Butler, of Cleveland, read a paper entitled : *What should be the treatment in cases of impacted third molars?* The following is a brief abstract :

"There is rarely any irregularity of the temporary teeth. The length of the jaws is such that a crowded condition of the teeth renders irregularity infrequent. A physiological action is produced by the eruption of the first permanent molars, and the lengthening of the jaw backward allows the second molar to erupt. The situation of the third molar is well known. Its structure gives a good indication of the health of the individual. There is often very severe trouble arising from impactions. Much trouble comes from inheritance of incongruous arrangement. The mother having small jaws and father larger ones, the intermingling of these two elements, with admixture of different sizes of teeth in the offspring, causes much of the suffering from impaction. The emergence of the tooth comes at a time when the jaw bone is solidified to such an extent that space for an additional molar is

lacking. It is not good practice to sacrifice a sound second molar to allow the third to come into place.

“Treatment: Extraction and palliation. He often palliates by clipping the gum surrounding the tooth, and also by use of medicaments. If there is much inflammation of the gums he considers it better to wait until there is a subsidence before extraction is considered feasible. Forceps well adapted for such cases should be used. There is a great lack of proper forceps to meet the different cases. Anæsthetics, he said, were not always admissible, and he found the superior easier to remove than the inferior molar.”

#### DISCUSSION.

President REHWINKEL said that the field is a broad one, and that it is only by gathering up the fragments that we advance in our learning. He urged all to participate in the discussion.

Dr. GEO. W. KEELY thought that it was sometimes hard to know what to do when the third molar erupts. The older the patient is at the time of eruption the more difficult, as a rule, is the eruption. When the second molar is badly decayed and the pulp exposed, extraction is indicated. He then cited cases. He sometimes found it necessary to remove the second molar to allow the third to come into place.

Dr. CALLAHAN exhibited specimens of teeth, and spoke of using the elevator by inserting it between the second and third molar and prying the third from its socket.

Dr. SIDDALL, of Oberlin, said that there were twelve or fifteen hundred students at Oberlin, and that all are cutting their wisdom teeth. For lower third molars he uses Physick's forceps, altered to suit himself. This was done by changing the angle of the beaks.

Dr. HARROUN, of Toledo, in the past two years has resorted to a new method of extracting the roots of impacted teeth when the crowns were broken off, by using the dental engine in getting out roots, and had found it very useful. A good, sharp lance drill is introduced between the tooth and alveolus, cutting out portions of the latter and also separating the roots. Then, with a small elevator, the pieces of roots are lifted out with ease. Sometimes portions of the process are removed with the drill sufficient to get a hold with the forcep, and the roots are

removed. It is easier to drill about the lower third molars than the upper, from their position.

Dr. BUTLER exhibited various styles of forceps and specimens of anomalous teeth.

Dr. J. TAFT heartily approved of Dr. Harroun's method, and thought it the greatest wonder that many persons had not discovered it long ago. He spoke at some length on the variations in form and location of third molars, and advised great caution in the use of Physick's forceps.

Dr. J. A. ROBINSON, Jackson, Mich., said that with right angled forceps he clamped around the tooth close to the second molar; then there was no difficulty in dislodging it.

Dr. TAFT found that those molars which are wholly impacted give the most serious trouble.

Dr. CALLAHAN described a case in California of impacted molar coming to his notice while residing there. It was one in which the case had been treated by the very best surgeons on the slope for scrofula. The patient came for advice, and, the trouble being recognized, he was advised to have the tooth removed, and became so angry that he left in a rage. Soon after he went to another dentist who extracted the tooth, and had to pay three hundred dollars for the service of the dentist (after a law suit) having before paid to surgeons and physicians nearly three thousand dollars for treatment.

Dr. POTTER said that he has an impacted molar in his own mouth; the trouble began six years ago in the form of a tonsillitis, which came on occasionally. As soon as the irritation commences he feels a pressure against the tooth anterior to the erupting one. Pain is relieved by pressure of the gums in the opposite jaws against these places in the region of the molars.

Dr. TAFT said that this illustrates one of the troubles that may come from impaction. Much suffering is avoided by removing the offending tooth. Physicians and surgeons often make serious mistakes; they do not examine carefully, and think that it is just some slight throat trouble.

Dr. C. R. TAFT believed in the free use of the chisel in tight places, using the mallet, and breaking up the tooth so that it can be picked out with the forcep.

Dr. BELL, Cleveland, cited a case where a domestic was sub-



ject to epileptic fits. An impacted third molar tooth was removed. Now she has only one a month, sometimes skipping a month.

Dr H. A. SMITH said that when the bone has matured and the teeth commence to be erupted, the impaction produces nerve lesions of the fifth pair, and it is from this cause that obscure pains may arise. Recognizing such impactions gives us the power to relieve the persons afflicted. I have used Dr. Harroun's method for a number of years past. He uses a long conical bur drill. It is an excellent method. If difficulty arises in forcing a drill along the side of the tooth, sometimes it becomes necessary to clip away portions of the alveolus. It is surprising to see how the patient will submit to the operation. For superior molars, sometimes a disk is used, and, cutting down through the alveolus, the buccal roots are separated. Introduce a chisel and spring the roots apart, and extract.

The subject was passed.

(TO BE CONTINUED.)

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## EDITORIAL.

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### SALUTATORY.

The DENTAL REVIEW hopes to accomplish all that its name implies, by reviewing books and articles of merit wherever they appear and in whatever language written. It makes its bow with no loud blowing of trumpets, nor with promises of work to be performed which it will be unable to fulfill. It appeals for support to the thinking and reading portion of the profession, whose contributions it solicits, and if found of value they will gain entrance to its columns.

The editors and the publisher believe that there is room for a journal that will deal with the issues of the present, and advocate reforms for the future, in education, legislation and practice. They will do their utmost to present matter worthy of perusal by the most critical, as well as to furnish for the practical every-day

dentist pabulum suitable to his needs. The REVIEW will aim to be international in character, while at the same time local matters will receive their full share of attention. This journal does not expect to fill its pages by republication of articles *in extenso*, but rather intends to offer its patrons original communications, condensed society reports, reviews, abstracts and current news items from all portions of the world. Special correspondents have been engaged in many foreign countries and contributions have been promised from the pens of well-known writers at home. The editorial pages, when it seems advisable, will discuss questions of interest to the profession, without acrimony or the display of partisan views. In short, it will be the endeavor, by honest labor, the exercise of good judgment and the genuine love which each and all bears for his chosen profession, to make of the DENTAL REVIEW a journal, pleasing to the eye and a valuable companion, both for the office and the fireside study.

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The fifteenth day of the month has been selected for the publication of this journal in order, that notable papers appearing on the first day of the month preceding its issue may be reviewed. As it is untrammelled, owing allegiance to no college, society, manufacturer or dealer, it will be fearless in its methods of criticisms, ever bearing in mind the honored maxim, "with malice toward none, with charity for all." Discoveries and new inventions will be noted in its columns, and new methods of practice proposed will be submitted to crucial tests before they are recommended. Obsolete methods, and materials which are valueless, will be sharply and decisively dealt with.

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#### PREScriptions AND PRESCRIPTION WRITING.

If anything were needed to prove the inability of the average dentist to write prescriptions intelligently, the following sample, taken from the report of the meeting of the Southern Dental Association and published in the *Independent Practitioner* for October, must appear convincing :

Crystals Iodine,	-	-	-	-	3 gr.
Tincture Aconite,	-	-	-	-	3 drachms.

Myrrh,	-	-	-	-	-	1 oz.
Tannin,	-	-	-	-	-	10 gr.
Gaultheria,	-	-	-	-	-	q. s.
Alcohol sufficient to make 3 oz.						

This prescription!! is recommended as a mouth wash to be used by the patient at home, nothing being said as to the proper dilution or the manner of using it. As no member of the association is reported as saying anything concerning this truly remarkable production, we take the liberty (presuming it to be correctly reported) of making a few remarks on prescriptions and prescription writing in general and this specimen in particular.

The proportions of the various ingredients are altogether too unequal. For instance, of what possible value could gr. iij of crystals of iodine be in a three ounce solution or mixture? They would do little more than to color the solution. Secondly, we find fʒiij. of tincture of aconite, whether of the leaf or root is not stated. This gives of the total volume of the prescription containing minims 1,440, about one-eighth of tincture of aconite root (presumably) or minims, clxxx. The condemnation of such a poisonous compound recommended to be used as a mouth wash, undiluted, is wholly unnecessary. It carries it on its face. Thirdly, myrrh ʒi., whether powdered myrrh or the tincture is called for is not stated. If gum myrrh is what the author desired, it would not dissolve in the quantity of alcohol added. In either case the quantity is too great in such a prescription by ninety one-hundredths. Fourthly, tannin, gr. x. While we could say something concerning this, we forbear, in order to make a remark about gaultheria q. s. We have not the slightest desire to wound the feelings of the gentleman who evolved this compound from his mental storehouse, but we confess that gaultheria q. s. is too much for our understanding. Does he mean oleum gaultheria? If so, why not express it in minims or drops? If the essence or infusion is meant, why not so state it? Its only value in the prescription would be to render it agreeable to taste and smell, and to accomplish this the prescriber would necessarily use at least ʒss. Fifthly. Alcohol sufficient to make fʒiij. The opportunity for rendering this prescription of any value to the user was lost by the author's not adding sufficient alcohol to raise up to fʒviij. at least. By so doing the tincture of aconite

root would have been diluted to such an extent that possibly no harm could befall the user. It must be remembered that aconite is a powerful drug and the careless, not to say criminal, negligence of an author in permitting himself to father such a production in this public manner, without a protest being offered, is, to put it mildly, a reflection on the intelligence of his auditors. We prefer thinking that as little attention was paid to its delivery as to its composition, and it thereby escaped analysis and correction.

In conclusion, to dismiss the subject of this prescription, it is not properly framed or clearly expressed. This is a fault that many prescribers are guilty of, leaving it to the intelligence of the apothecary to supply the proper ingredients and also to select the class to which they belong. Unless the pharmacist has had years of experience and has also some knowledge of the practice of medicine, it is not always an easy matter to supply the gaps left in the prescription by incompetent or careless prescribers. When writing a prescription for external or internal use, the greatest care must be exercised to avoid giving large doses or lotions of powerful remedies—especially if cumulative—which may prove poisonous. We think that the advice given by Prof. H. C. Wood at the conclusion of his work on therapeutics, materia medica and toxicology very appropriate with which to close these remarks: "In the practical use of remedies, very much depends upon the methods of their combination, and, so far as concerns the reputation of the physician (dentist), no little importance is attached to the mere prescription writing. The recipes of the master are very widely seen, and he who is incorrect in the grammar or spelling of his English or Latin, or departs without reason from the traditional forms, lays himself open to ridicule, than which nothing is more damaging. A crooked, bad chirography is the traditional mark of learning; but absolute plainness should be a *sine qua non* in the writer of prescriptions. This should also apply to abbreviations; these should be of such a character as not only to be readily made out, but also to be so evident as to afford no shelter to the apothecary, whose carelessness has led to serious error. In the case of alkaloids and other powerful remedies, the chief name at least should be written in full. In writing the prescription, all the



ingredients should first be put down, then the number of doses should be decided upon, and the individual amounts of each substance marked seriatim. It is a very good custom to always place first upon the list the strongest of the drugs employed.

\* \* \* The art of combining remedies is not a difficult one; but in practice certain principles should not be lost sight of. Chief of these are, to prescribe as few remedies as possible, and to use no powerful drug without a very distinct idea of what it is intended to do."

### CENTRAL ILLINOIS DENTAL SOCIETY.

The fifth annual meeting of the Central Illinois Dental Society was held at Peoria, Ill., October 12th, 13th and 14th, 1886. The active membership is in round numbers about fifty, and the corresponding members number ten. Of the whole number about forty were present, and most of them either took part in the proceedings or were interested listeners. The sessions devoted to reading papers, reporting cases, and the discussions, were well attended.

The clinics, to which two entire mornings were devoted, were instructive and interesting. Several papers of merit were read, and the discussions they elicited were profitable to all who heard them. An abstract of the papers and discussions will be found under the heading of society proceedings. The next meeting will be held on the second Tuesday in October, 1887, at Springfield, Ill. The officers and committees for the ensuing year are as follows:

President, E. B. Call, Peoria; Vice-President, J. M. Fishburn, El Paso; Secretary, W. A. Johnston, Peoria; treasurer, S. F. Duncan, Wilmington.

Executive Committee—K. B. Davis, chairman, Springfield; J. Frank Marriner, Ottawa; G. O. Shafer, Champaign.

Committee on Code of Ethics—H. H. Townsend, Pontiac; J. R. Rayburn, Fairbury; R. M. Scanland, Peoria.

Committee on Dental Literature—J. D. Moody, Mendota; Garrett Newkirk, Chicago; Louis Ottogy, Chicago.

Committee to Report on Clinics of 1886—C. R. Taylor, Streator; S. W. Lakin, Eureka; John T. Houston, Peoria.

Committee on New Appliances—A. S. Waltz, Decatur ; John Campbell, Bloomington ; J. W. Collins, Lincoln.

Committee on New Remedies—C. J. Tibbetts, Quincy ; F. H. McIntosh, Bloomington ; J. P. Foltz, Mendota.

Superintendent of Clinics—J. A. W. Davis, Galesburg.

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### MOTORS FOR THE DENTAL ENGINE.

For several years past we have seen and read advertisements of water, gas and electric motors, but up to the present time none of the machines which we have investigated can become universally applicable or valuable in all dental offices. The gas engines are too noisy and bad smelling for use in the operating room. Electric motors are too uncertain, and they always require constant watching, and even then they are liable to a sudden stoppage. Water motors, on the other hand, however valuable they may be, can not be used in offices located above the third or fourth floor of a tall building. If all dentists were located on the ground floor, or even on the second floor, the water pressure from city water works might suffice in nearly all cases. In many cities and towns where large quantities of soft coal is consumed, this is not practicable, on account of the murkiness of the atmosphere. If some inventor would only construct a gas or gasoline engine of from  $\frac{1}{4}$  to  $\frac{1}{2}$  horse-power, for propelling the dental engine and the laboratory lathe, he could soon make a fortune, or if he will only adapt a water motor to our use, so that we would not have to depend on city pressure, it would be a great boon to those of us who are growing old rapidly, on account of the intense strain which the constant running of the dental engine entails. Who will be first to present a practical common-sense machine? We invite communications on this subject.

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### LOCAL SOCIETIES.

In May of the present year the Illinois State Dental Society inaugurated a movement which, if carried out, will prove of great benefit to the profession. Committees were appointed to organize auxiliary societies in different portions of the State. At present we have the Illinois State Society, the Chicago

Dental Society, the Chicago Dental Club, the Odontological Society of Chicago, and the Central Illinois Dental Society. There are about 900 dentists in round numbers in the State. It would be rather overestimating the mark to say that 250 are members of any of the above societies. We think there is room for at least one local society outside of Cook County in every three congressional districts in Illinois. This would give us six local societies in the territory named. Such societies could meet quarterly, and at first devote one day and evening to the reading and discussion of papers, or have clinics in the morning and do their scientific work in the afternoon and evening. By so doing a great good could be accomplished, both for the profession and the public, and very soon these societies would become feeders for the State association. It is hoped that the district committees have already begun their work in this movement for the elevation of the scientific status of our brethren not at present members of any organization.

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## DOMESTIC CORRESPONDENCE.

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### PROPHYLAXIS IN DENTISTRY

#### *To the Editor of the Dental Review:*

Were it not for the fact, that many human teeth are prone to decay, we as a profession would have no existence. And to what extent humanity is heir to this malady can be seen to some degree, by looking around at the numerous dental signs which are to be found in our cities and towns, the owners of which have each more or less to do in his professional sphere. Yet only a small portion of those affected come under the care of a dentist. I believe I am safe in saying that ninety-five per cent of the labors of those engaged in the work are spent in repairing, in some manner, either broken-down tissue or disarranged functions. Do we not as a profession, with the preponderance of reparative work, lose sight of the fact, that much can be done to prevent bad teeth? Especially when we have patients who have not yet arrived at the age of maturity,—excepting those who show marked signs of

hereditary tuberculosis or syphilis,—and yet we should not despair of doing something with even these. I believe much can be done to prevent caries of the teeth, by doing away with the habit of so much drinking during meals, and strict attention to the proper amount of insalivation.

In these days of much hot food, and many beverages, children especially drink too freely while eating, for the lack of being taught differently, thereby robbing the organs of mastication of their natural functions, which tends to their deterioration to a great degree.

When one takes a morsel to eat, and washes it down with something to drink, without taking time to masticate properly, he deprives of sufficient exercise the whole of the apparatus intended by nature for the preparation of the food for digestion; by this neglect the loss to the organs and muscles in, and about the oral cavity is very great. Without mastication the benefit derived from the mechanical rubbing, and polishing of the teeth is lost, especially affecting children, who as a rule are not given to much care in brushing them.

The salivary glands are also robbed of their natural functions, and thereby become weakened and lose much of their vigor.

The muscles of mastication also become weak for want of use, and this I consider one great factor in deterioration of the teeth, for lessened function on the part of muscles means lessened blood supply, and consequently weakened muscles, bones, teeth, and glands.

Again, the periodontal membranes, which form the cushions for the roots of the teeth can only be well developed by their constant and proper use, when the teeth are brought together with the necessary force to sufficiently triturate the food, the blow is considerable and needs a good cushion to prevent pain during the act.

I believe also, that when the periodontal membranes cease to be of use as cushions, from disuse, or loss of crown, or antagonist, that they have a greater liability to diseases, prominent among which is exostosis.

It requires no argument to prove that constant and judicious use of any muscle or organ of the body, will make that member stronger, yet who thinks of systematically exercising the jaws



and teeth for the purpose of their better development, as they would engage in calisthenics for the development of other parts of the body, and yet I know of no organs that are more universally broken down early than these. On page 913 of the "American System of Dentistry," Dr. Jas. Truman says: "It has long been observed that those teeth in constant use are more perfectly formed, and resist caries better than those rarely brought under the force of mastication. Dr. G. V. Black in the same work, does not even refer to this as a predisposing cause, in his article entitled "Predisposing Causes of Caries." I have known a few dentists who have recommended to their patients the use of chewing gum. This may be the source of much good, if systematically carried out; however it can not supplant or be anything like the benefit that the proper amount of mastication is during meals, for there is no food to swallow and nothing savory to excite the flow of saliva; the chewing of gum, if a desirable practice would be only a temporary good, while the proper habits formed in eating would last a lifetime and continue to be of lasting benefit.

I have taken some statistics for the purpose of showing how much exercise the jaws get during meals with the following result. During ninety-six meals, eaten by fifteen different persons, the maximum number of bites shown is eleven hundred and ninety, the minimum two hundred, average seven hundred and forty-one and a small fraction. This average I believe to be higher than is natural, from the fact that the mind is on the subject while counting, and under these circumstances the number of bites is almost sure to be increased; however I believe it to be none too high, for the number of times the jaws should come together, in order to properly triturate and insalivate an ordinary meal of meats, bread, and vegetables, for each one of these persons drank at each meal about one-half pint of fluid of some kind, which drinking I consider to be a habit more than a necessity. As to children, making an allowance of twenty-five per cent. for the difference in age, we will assume the average number of bites for a child of ten to be five hundred and fifty-seven. Now, if the child reduces this sum one-third by drinking often to moisten the food, the loss in one day is what it would take to masticate one whole meal, and this, in itself, is sufficient to keep a set of teeth in as good order as they often are kept. In view

of these facts I am prepared to say that if the food is masticated sufficiently long to become perfectly insalivated it will reach twenty-five per cent. above the average here given, and if the amount here indicated is lost to these organs, it is certainly a very great one, and undoubtedly will show in evil results.

On the other hand, it can safely be claimed, and shown, that the proper attention to these matters, not only prevents undue decay, but will arrest its progress in many cases, and be productive of strong and healthy organs of mastication. Sufficient exercise of these organs means increase of blood supply, which in turn means increase in size and strength, and this does not apply more to the muscles and glands than it does to the teeth themselves, and their adjoining and supporting tissues.

CINCINNATI, O., Oct. 20, 1886.

M. H. FLETCHER, M.D., D.D.S.

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#### IMPLANTATION OF TEETH.

##### *To the Editor of The Dental Review:*

The most interesting feature of the meeting held by the First District Dental Society of New York, on the evening of October 5th, was the report of the clinic which the society gave during the afternoon, when Dr. William J. Younger of California, was present and performed one of those new and marvelous operations which he very appropriately calls implantation. After the reading of a very able paper by Horatio C. Merriam, D. M. D. of Salem, Mass., on "Gutta Percha and its Use in Operative Dentistry," and a paper by Dr. Edward C. Kirk of Philadelphia, on "The Etiology of Erosion," there was a call for Dr. Younger, who favored the society with a few remarks relative to his pet operation. This differs somewhat from the old operation of replantation and transplantation over which some of our professional brethren were so enthusiastic a few years since. For instance, in replantation we extract a tooth which has become very much diseased about the root and in the surrounding tissues, excise a portion of the diseased apex, and, after giving the pulp canal the proper treatment, thrust it back into the socket.

The circumstances under which this operation is generally performed are not very favorable, as it is usually undertaken with the view of preventing or relieving an alveolar abscess. The pericementum and the alveolar process are usually highly inflamed with pus forming or already formed at the end of the root. In such cases we have a diseased root replaced into a socket that is also diseased. The disease is not removed,—the conditions only modified. The congestion may subside for a time and the tooth become comparatively comfortable, but disintegration is likely to follow, and in two or three years the root is entirely destroyed and the tooth becomes worthless. In transplantation we force into a cavity from which a diseased root has been taken, a recently extracted and healthy tooth. In this operation there are the same conditions present in the socket and the surrounding alveolus as in replantation, sufficient inflammation in the tissue to cause trouble with the new occupant, and the result is very apt to be the loss of the tooth in a short time. In this new operation of Dr. Younger we have a healthy root placed into a healthy socket, which is made in the alveolar process. This is done by the use of graded trephines, finishing the walls with burs of various sizes and shapes. The tooth to be implanted, after being soaked in warm water at a temperature of 120° Fahr. for twenty minutes, to soften its membrane, is placed in the socket and retained with ligatures. In a few days the tooth becomes quite firm; and a peculiar fact is noted in regard to the color, which is, that if the implanted tooth is lighter in shade than its neighbors, it gradually turns darker, until it harmonizes with them. The operation that I saw was a success, and a perfect success. The tooth implanted was a superior central incisor, and within two weeks was as firmly imbedded in the jaw as any of the other teeth, which fully demonstrates the fact that it gains a vital connection.

The wonderful tenacity of life (?) which the peridental membrane possesses, is something entirely new to us. Dr. Younger has discovered and proven, beyond the possibility of doubt, that this membrane preserves its vitality for more than a year. A tooth implanted by him, after having been out of the jaw for thirteen months, was a perfect success.

Of course, the success of this operation depends upon the living membrane, its wonderful vitality, and the recuperative power

of the patient. It is very gratifying to know that the operation can be performed with absolute certainty of success. I firmly believe it will become thoroughly established in professional practice as a surgical operation that can be performed if carefully and skillfully executed. However, I do not believe it will ever become popular, on account of the fastidiousness of our patients and the unavoidable pain attending the operation.

New York City, November 1st.

PAUL.

## FOREIGN CORRESPONDENCE.

### SOME OBSERVATIONS ON ENGLISH DENTAL APPLIANCES AND METHODS.

*To the Editor of The Dental Review:*

It is not the intention of the writer to enlarge upon subjects that are already as household words to the profession, but to note where advancement attains on this side, or note where possible improvements might be made. The laboratory is now considered by the progressionists (?) in the United States, and by the elite of the profession here, to be that part of the body politic of dentistry that should be eliminated from their association, and relegated to the tender mercies entirely of the "Mechanical Dentist" (U. S.) or "Workman" (English); for here as well as in the United States there are those who evince a desire to forget that to prosthetic dentistry, and to that alone they owe their present preferment.

While the premium upon inventive genius is not as remunerative here as in the United States, I think in the dental profession it has little lack of appreciation to complain of.

Mechanical appliances for the laboratory of very much improved types are quite plenty, and very generally in use; the English dentist in this respect being in no way behind his trans-atlantic brother in availing himself of anything that will facilitate his labor or improve the products of his laboratory. In many instances I am constrained to think that a clearer perception of the ends to be attained, would subserve a better purpose than being



surrounded with a multiplicity of appliances, the use of which is but partially understood by those to whose care their manipulation is entrusted.

For heating appliances, whether it be for reducing, soldering, vulcanizing, or the thousand and one things about dentistry in which the application of heat plays such an important part, the manufacturers of this country surpass those of any other, as a glance through the catalogues will prove; Fletcher's name now being familiar to all the advanced corps of dentists in especial connection with this requirement of our profession.

Verrier with his gas furnaces has attained to considerable perfection, but they do not yet meet the requirements of the average dentist, the results often being of an irregular nature, so much so that any one in an active practice and making a specialty of fine work would rather rely upon something of smaller dimensions, the use of which would produce less disturbance of their equanimity, and be more of an endorsement of their artistic ability.

I think the pressure vulcanizers as used in the majority of laboratories are very good. With their various automatic arrangements, vulcanizing is rendered an operation that may result in a uniformity of realization hardly to be attained even with the most costly apparatus.

It would take too long to describe the various bench tools; they are of infinite variety and most of them well adapted to the purpose intended, and their quality is unexcelled. Metal plates are more largely used here than in the United States, and in this branch of our profession I think much more perfection is arrived at here than there, although I must say I have seen metal plates that were "fearfully and wonderfully" made, with clasps, bands, wires, etc., incidental in a certain degree to metal work. It is apparent that an excuse has been made to encumber cases in order to ensure their retention, which suggests at once an eye only for two objects, the retention of the plate, and the receipt of the fee.

The foregoing applies to many practitioners here, but I am pleased to note there are some, who are really earnest in their endeavors to place dentistry upon a higher plane.

Modeling compounds are largely used here for taking impres-

sions, first, because they are easy to use, secondly because the use of plaster is but little understood, especially is this the case in impressions for partial cases. I have never seen an impression of the above description taken during my sojourn here.

I have only partially gone into the mechanical aspect of the case which I hope to complete in the next paper; after which I hope to be able to secure a little of your valuable space for a consideration of the operative side of the question. "78."

LONDON, ENGLAND, Sept. 30th, 1886.

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*To the Editor of The Dental Review:*

It gives me great pleasure to comply with your request, and the more so that I find on my return to France dentistry and dentists have decidedly and undoubtedly progressed. The spirit of education is here. There exist to-day two schools in Paris devoted to the interests of the dental profession. In both of these schools the student can get instruction in every department of our science. It would be too much to claim now, that practically he would gain as much as in one of our best American institutions, for these schools are young and the demand of the French people does not call for as high a standard of practical education. In certain branches no schools in the world give greater facilities than these, for the attainment of the best education the student could desire. In anatomy, physiology, pathology, therapeutics, chemistry, materia medica, surgery, etc., the student has every advantage. In prosthetic dentistry the French dentists are skillful to the point of giving the highest finish to their work; but in this department as in operations on the natural teeth, the demand has not stimulated them to overcome the difficulties of adaptation; consequently one sees many defects in artificial dentures.

In operative dentistry from a scientific point of view, the French are in their infancy. In an old civilization like this it is a slow process to change the established order of things, and especially where it must be for a long period a pecuniary loss to the profession. There are many men in the dental profession in France, capable of doing excellent work, but the impossibility of attending to from twenty to forty patients daily is an effectual bar to the exercise of one's best gifts.

The "fee system" of charges for professional services is undoubtedly the reason why dentistry in this country has not, in the years past, attained a higher excellence. The operator who receives no greater fee for an operation requiring an hour for its performance in one way, which could be completed in fifteen minutes if done in another way,—especially when he has fifteen patients awaiting his services in the reception room,—is not likely to give the patient in hand the benefit of the longer time and greater excellence; and he is not to be held responsible entirely for this, the patient in the majority of cases asks no more, expects no more, in point of fact, decidedly objects to more.

This condition of things can only be revolutionized by education, first of the dentist, second of the people, and the first step was taken in 1880, when the Dental School and Hospital of Paris was founded by public subscription and a subvention from the city of Paris. The course requires three years, upon the completion of which the graduate receives the diploma of the dental school (*Diplôme de l'Ecole Dentaire de Paris*. D. E. D. P.)

Dr. M. M. Levett, an American dentist, occupies the chair of operative dentistry. It must take years, as a matter of course, before the effect of this school will reach the people; but it is sure to come. At another time I shall give you something regarding the other dental school, which is also to play an important part in the progress of the dental art in France.

G. C. DABOLL, M. D. S.,  
Paris, France.

*To the Editor of The Dental Review:*

DEAR SIR.—It is with much pleasure that I comply with your wish in giving expression to my views in regard to dentists and the dental profession of America. As you are aware, my journey to the United States was made for the purpose of extending a knowledge of my method of filling teeth among your dentists, and at the same time also to prove that there are dentists in other lands who not only have taken ample advantage of American improvements, but who themselves have taken steps of advancement.

Any one visiting Europe ten or fifteen years ago would have been astonished at the exceedingly imperfect development of the

science of dentistry. The mechanical and operative branches of dentistry were not taught in the universities, and hence had to be acquired in private offices; and it is for this reason that a dentist who has passed his examination according to the laws of his own country, lacked very much indeed in that practical knowledge which one possessed who had attended but six months at some dental college in the United States.

This is now changed however, as the German, French, English, Scandinavian and other governments have established dental departments in their universities, in which the practical branches are very thoroughly considered. We are taking advantage of the experience of Americans in educational systems, and upon this excellent foundation propose to advance. In a few years we hope to be able to cope with Americans in every field and particular; and in so far as my acquaintance with you extends I am satisfied that you will rejoice with us and continue to aid in perfecting our specialty.

Aside from the extraordinary skill and ability with which so many of the American dentists are endowed, I was astonished by the critical manner in which my method was examined, and the impartial fairness with which judgment was passed upon it.

I departed from your shores with the most pleasant impressions, and to me the days which I passed among you were days of joy and pleasure long to be remembered.

Yours very truly,  
BREMEN, GERMANY, October 6, 1886. W. HERBST.

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## REVIEWS AND ABSTRACTS.

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TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY, AT THE MEETING HELD IN ROCK ISLAND, ILL., MAY 11TH TO 14TH, 1886. H. D. JUSTI, CHICAGO.

The transactions of the Illinois State Dental Society for 1886 appears considerably enlarged as compared with the volume of last year. The present volume contains 152 pages of reading matter devoted to addresses, essays and discussions; and 56 are taken up with the minutes; making a total of 208 pages. In



general appearance it takes a very decided lead over other volumes devoted to similar purposes. The binding, printing and general arrangement of its contents is certainly all that could be desired.

The President's annual address is confined almost entirely to methods of selecting, training and educating students for the practice of dentistry. The position taken by the essayist, is "That colleges which confer degrees for merit only, will be the places where men of brains will go for training." The suggestion of establishing more dental societies throughout the State is a good one, and we are heartily pleased to see that the society has taken an initiative step in this direction. The motive in such a movement is very apparent. It will prompt and encourage men in the profession to become interested in society matters that have heretofore held themselves aloof from attending meetings, because of a lack of interest individually.

There is one other point advanced in the paper which ought to be adopted by every one interested in the pursuit of knowledge, and that is, selecting a suitable hour in the day which is to be devoted exclusively to the study of some scientific subject connected with dentistry.

Dr. Harlan's essay on "Antiseptics and Disinfectants" contains a great deal of valuable information relative to the merits of various preparations used as antiseptics and disinfectants.

We are sorry that he did not use more care in the classification of the remedies mentioned—*i. e.*, placing those drugs used as antiseptics in a group, and those used as disinfectants likewise. By so doing it would enable a person to select the needed article without having to refer to a materia medica to determine which group it really does belong in. The essayist has given us a very clear definition of the terms antiseptic and disinfectant, and we see no reasonable excuse for a mixing up of these terms hereafter.

An essay on the "Preparation of Pulp Canals and of Cavities for Filling," read by Dr. C. R. Taylor, covers considerable ground, and more was undertaken by the writer than could well be accomplished in one paper, on account of its comprehensiveness. The preparation of cavities should have received a more careful consideration than they did, as this is one of the most important features in the preservation of teeth by filling.

Dr. J. D. Moody's essay on "Post-graduate Study" needs no comment at our hands. It stands on its own merits. The production is timely, and the sooner we can arrive at a definite understanding as to what constitutes a curriculum for post-graduate study the better; because there are many young men that would be glad to avail themselves of such a course, were it announced.

Dr. J. G. Reid's essay on "Oral Chemistry" is a subject that can not be considered *per se*, but must be taken in conjunction with the subjects relating to fermentation and micro-organic life. It is to be regretted that the questions raised in the paper could not have been treated more fully. It is to be hoped that Dr. Reid will pursue his studies in this field. There is much room for an extended investigation in the chemical variations of mixed saliva. The paper is timely and up to the recent status, and will be read with interest and profit.

An essay on "the Retention of Pulpless Teeth in the Jaws," by Dr. E. Noyes, bears evidence of a very careful preparation. This is a leading subject, and one which every conscientious dentist should strive to master. In view of the fact that we are called upon so frequently to treat pulpless teeth, it behooves us to exercise our very best skill in the proper preparation and management of such members, and to see that the many causes so specifically pointed out by the essayist, which operate injuriously, are overcome. Many failures can be traced to faulty manipulation and a tendency to hurry the operation. The paper is truly representative, and is based entirely on scientific principles throughout.

A report on "Dental Science and Literature" gives a brief review of various literary works that have appeared during the year pertaining to dentistry. This report is a very commendable feature of the proceedings, and is a practice which we would like to see adopted by other societies.

A report from the Supervisor of Clinics appears to us rather harsh in some parts. Undoubtedly a report could be made which would prove equally as effective if couched in milder language.

The subject of Oral Surgery did not receive the attention it deserves. This is an interesting and important branch of dentistry, and we see no excuse for not having a place on the

program each year for a paper on some surgical subject connected with the oral cavity.

"Micro-organisms of the Oral Cavity," by Dr. G. V. Black, is an addition to the proceedings which is far in advance of anything heretofore offered before a dental society in the shape of practical instruction. A half-hour lecture at each session was devoted to the demonstration and dissemination of knowledge relating to the bacteria of the mouth, and the important part they play in the production of caries and other diseases. This is just the kind of work which will make the meetings exceedingly attractive, and likewise instructive to its members. We hope that Dr. Black may be persuaded to continue his services in this direction each year before the society. The volume as reviewed contains but few errors. The orthography could be improved upon in a few words. The publication committee has evidently labored hard to make the book equally as meritorious as its contents, and the members of the society ought to feel grateful to the committee for the promptness with which it was issued so soon after the meeting. We congratulate the Illinois State Dental Society on being able to furnish such a report.

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#### MICROBES, FERMENTS AND MOULDS.

Every dentist should possess at least one work on microbes or bacteria. Among the many issued during the last year or two, we know of none better adapted for general use than Trouessart's *Microbes, Ferments and Moulds*. International Scientific Series, vol. LVI. D. Appleton & Co., New York; W. T. Keener, Chicago.

Within the covers of this unpretentious volume will be found a vast amount of practical and useful information relating to parasitic fungi and moulds, ferments and artificial fermentation, microbes, of the diseases in man and animals, culture of bacteria, terminology, laboratory research, etc. We abstract the following to show the nature and character of the work:

"Refrigeration by ice has been used to preserve meat. But where congelation has occurred in the fluids contained in the muscular tissue, putrefaction sets in, and rapidly increases as soon as the temperature rises a few degrees above freezing point.

The meat also acquires an unpleasantly sweet taste. It will be remembered that the first cargo of frozen American meat which was brought to Paris, had contracted an unpleasant taste, and was very soon tainted. When meat, game, or fish is kept in ice the congelation of the fluids contained in their tissues must therefore be avoided.

“Many antiseptics, vinegar, alcohol, glycerine, etc., may likewise be used to preserve meat and other alimentary substances.

“*Antiseptics and Disinfectants.*—We will discuss the substances which are thus designated, especially from the hygienic point of view, and as a preventive treatment of contagious diseases, indicating the action of these substances on microbes.

“Antiseptics have been studied by Jalan de La Croix with reference to their action on microbes in general. His experiments were performed on culture liquids made of the juice of cooked meat, into which he introduced an equal number of drops of the same broth, which contained fully developed bacteria. He next ascertained the dose, in milligrammes, of an antiseptic substance which would suffice either to arrest their multiplication or to destroy the microbes, and consequently to sterilize the liquid.

“He analysed in this way twenty substances considered to be antiseptic, or commonly used as such. He has published a table in which these substances are classified in their order of activity, and it includes, among others, the following antiseptics, which we cite in the order assigned to them:

Corrosive Sublimate (Mercuric Chloride)	-	No. 1.
Chloride of Lime at 98°	- - - -	No. 3.
Sulphurous Acid	- - - - -	No. 4.
Essence of Mustard	- - - - -	No. 9.
Thymol	- - - - -	No. 13.
Salicylic Acid	- - - - -	No. 14.
Carbolic Acid	- - - - -	No. 16.
Boracic Acid	- - - - -	No. 18.
Alcohol	- - - - -	No. 19.
Essence of Eucalyptus	- - - - -	No. 20.

“The three last substances are incapable of sterilizing culture broths.

“This table shows that carbolic acid, which is now so much in use, does not destroy microbes so efficiently as salicylic acid,



permanganate of potassium, thymol, benzoic acid, bromides and iodine. In this estimate, however, we must take into account how far the use of each antiseptic is practicable.

“Thus corrosive sublimate, which these experiments show to be the best antiseptic, can be used as an external lotion, but it can not be given internally in doses sufficient to produce the desired effect. Eighty milligrammes are required to sterilize a litre of broth, and forty to arrest the development of bacteria. Twenty milligrammes will not effect this result; and this latter dose is a maximum which it is almost impossible to exceed in man in the course of twenty-four hours, without poisoning him.

“Sulphurous acid is very effectual when employed in fumigations, but it does not penetrate to the interior of the tissues, and only acts on the microbes on their surface. It does not destroy their spores. Iodine has great effect in this respect. Davaine has ascertained that seven milligrammes of iodine suffice to destroy the bacteria of anthrax in a litre of liquid. Instead of a hot iron, tincture of iodine might, therefore, be used to cauterize the bites of poisonous flies, carbuncles, and the pustule of anthrax.” .

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TRANSACTIONS OF THE INDIANA STATE DENTAL ASSOCIATION  
AT THE MEETING HELD IN INDIANAPOLIS, JUNE 30, JULY  
1 AND 2, 1886—MRS. W. M. HERRIOTT, INDIANAPOLIS, IND.

The transactions of the Indiana State Dental Association for 1886 are before us for review. In its general appearance, the volume is quite creditable, containing 39 pages of reading matter distinctly printed.

The essay on “Pain Obtunders,” read by Dr. A. W. Harlan, of Chicago, contains some new and original information, especially in that portion of the article referring to the painless excavation of sensitive dentine by means of compressed warm air in connection with remedies used as pain obtunders.

Considerable emphasis is laid upon the use of *Cannabis Indica* as an agent for obtunding sensitive dentine. This preparation can not be relied upon universally, but it will reach a larger majority of cases, perhaps, than any other known remedy used for that purpose. The paper contains many suggestions which the careful reader can turn to his profit if so inclined.

The two essays on "Dental Education" are exemplary, and we are pleased to see a lively interest manifested in this hackneyed subject. The papers do not suggest much that is new, but they serve the purpose of keeping before our minds the importance of a higher education in preliminary professional training.

The essay on the "Management of Pulpless Teeth," read by Dr. J. E. Cravens, "takes the palm" for lack of originality. We distinctly remember, a few years ago, this same sweet voice "Crying from the wilderness, Hear me!" "My success in the use of lacto-phosphate of lime for the capping of exposed pulps, is sufficient to warrant my saying that we need never expect to find its equal." From that time on, the poor little pulps were capped in all their various stages of disease and disintegration by the wholesale; however, they died just the same, and it did not take the experienced operator long to disprove the fallaciousness of his theory.

Now comes the "ego" again proclaiming to the world a "new" method of treating septic pulpless teeth by what is termed "displacement," wholly ignoring the necessity for medication of the pulp canal or the diseased tissue beyond it in any form; relying entirely on mechanical methods for the removal of "bad odors." The theory promulgated by the essayist is not in accordance with the teaching of modern progressive dentistry. Life is too short for us to devote so much time to picking out "bad odors" from a tortuous root canal, with an instrument or a "sharpened stick." The paper, as a whole, bears no mark of progress, and can not be considered in any other light than that of sarcasm.

The essay read by Dr. M. H. Chappell, on "Anesthetics," shows an evidence of careful preparation. Although the ideas presented in the paper are familiar to many, still the author has ever been mindful in noticing the many minor points which go far towards making it a useful and ready reference for those who wish to increase their knowledge on this important subject.

In conclusion, we wish to say that the volume throughout is seriously marred by typographical errors; the mistakes being sufficiently numerous to reflect considerable discredit upon the Publication Committee, and to suggest that the pamphlet was mailed direct from the press-room, without ever having received

an examination or revision. In Dr. Harlan's paper, for instance, to cite a few of the most important errors, the oleo-resin of kava-kava appears as "oleo-resin of kora-kora," *Cannabis Indica* appears twice as "*Cannabis indicus*." On page 13, seventh line from the bottom, the word "pointed" evidently should be painted. In the same article, the familiar firm name of Parke, Davis & Co., appears as Cooke, Davis & Co. In Dr. Craven's paper the word "apical" is incorrectly spelled each time used; odor is spelled with an "e." We could continue pointing out misspelled words, and many other inexcusable errors in phraseology and punctuation, but time and space forbid. We hope future publication committees will exercise more care in editing the transactions, as a book can hardly be called valuable which is so seriously disfigured.

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WE are in receipt of the first annual announcement of the Louisville School of Dentistry, A. Wilkes Smith, M. D., D.D.S., Dean. The school opens January 20, 1887, and the term will close June 17, a little less than five months from the opening. We venture to suggest to the organizers of the new school that the present tendency of thought in the profession is rather favorable to a more lengthened period of study than is indicated by their announcement. We believe that a month or two added to the terms of all the five-months schools would be no detriment to them, and in all cases would be of practical value to the students attending the short-term schools. While it may be impracticable to lengthen the regular courses of instruction in all dental colleges at once, still we hope that the trustees and directors who govern these matters will make the attempt to do so in the near future, in order to more nearly equalize their teaching terms with those of schools requiring six, seven and nine months of continuous attendance on lectures, clinics, etc. This would be a great step in advance, and would receive the emphatic endorsement of the profession.

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TO THE EDITOR OF THE DENTAL REVIEW :

*Sir:*—Will some one of your readers be kind enough to explain the process of bleaching a tooth with the aid of, or by the use of, electricity? Somewhere I have seen it stated that teeth, badly discolored, could be made white again in a very simple manner.

HOWADJI.

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TO THE EDITOR OF THE DENTAL REVIEW :

I would like advice in regard to treatment of blind abscess. Whenever I try to treat a case of this character it almost invariably results in a swelled face for my patient, and it very much discourages me to make the attempt to treat such cases. I can not find anything very satisfactory in the text-books at my disposal. I have two or three teeth now under observation, which I would like to open into if I only dared to do so.

(Will some of our readers take time to answer the above?)

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TO THE EDITOR OF THE DENTAL REVIEW :

When the first permanent molar teeth are badly decayed at about the eighth or ninth year, what is the best treatment to pursue? I have a case of this kind, where the arch is not crowded or likely to be, but the pulps in the two lower molars are exposed, and the crowns are nearly gone in the upper teeth, but the pulps are unexposed. Shall all four of them be extracted now, or shall I wait a little longer? An early answer will greatly oblige "dentist."

SANTA BARBARA, California.

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TO THE EDITOR OF THE DENTAL REVIEW :

I have a patient for whom I have made four plates at different times, and he is utterly unable to make any of them adhere to the roof of his mouth. The gentleman is about forty years of age, and has lost one incisor tooth (central). He objects to wearing a clasp plate, and the adjacent teeth are free from caries, so that I do not advise a piece of bridge-work. What shall I do in his case?

PERKINS.

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TO THE EDITOR OF THE DENTAL REVIEW :

Capping pulps is one of my hobbies, and I believe I am generally very successful, but my method of capping is not usually adopted by my fellow-practitioners. I have found, that even after carefully protecting the pulp with gutta percha or other non-conductor, before flowing oxy-phosphate of zinc over it, the pulp dies after a lapse of time. Can some reader of the REVIEW enlighten me on this point, and tell me why this is so? My method now is to expose all pulps by removing all decay, or, if already exposed, enlarge the exposure; believing in the fact that all pulp tissue in contact with decayed dentine or any decayed animal matter is not in a perfectly physiological condition; hence, by the removal of this



dead tissue, and the free bleeding of the pulp, I secure a perfectly physiological condition, and believe that a smooth foreign substance is far more preferable in contact with the pulp, than a semi-decomposed mass of dentine, even though it be sterilized or brought into a supposed aseptic condition. I am not yet ready to say what success shall crown my efforts.

"L. S."

TO THE EDITOR OF THE DENTAL REVIEW :

I am in search of information in regard to the use of tin and gold combined for filling teeth. I have been in the habit of using Robinson's felt foil near the cervical margin of cavities, but find the substance too soft as a general rule. The patient often injures it by the use of pick, wherever accessible, and my fellow-practitioners, by virtue of its black color, invariably poke an excavator into it, and inform my patient that "the filling is failing," when in fact the margin is well preserved, but the felt foil is discolored. I have tried tin and gold, and like it very much, but find it to work very harshly sometimes. I wish some reader of the REVIEW would tell me in what the therapeutic action of tin and gold consists.

ERGO.

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—Will some one please inform me the nature of the renewed tissue which is formed in place of an abscess, after having been treated and pronounced cured. We are taught that the abscess must be thoroughly cauterized, the result of which is to destroy the pus-producing surface and stimulate a healthy granulation in the surrounding parts. Do these granulations assume the likeness of osseous or soft tissue ?

ENQUIRER.

## MEMORANDA.

Dr. Joseph Deschauer has returned from Europe.

Dr. D. J. Pollock, formerly of Sterling, Ill., has located in Chicago.

Dr. John J. R. Patrick, of Belleville, Ill., contemplates a visit to England and the continent, in the near future.

Dr. C. A. Kitchen, of Rockford, Ill., has been roaming in the wilds of Wyoming Territory for several weeks this fall.

The Missouri Dental College has a class of twenty-five matriculates, and has commenced its twenty-first session under very auspicious circumstances.

Dr. Nels Nelson, of Chicago, spent his vacation the past summer in roaming over Europe, and has but recently returned to resume the practice of dentistry in the country of his adoption.

Our friend, Dr. E. L. Jauncey, who has been located in St. Louis, for a couple of years, has returned to his first love (Chicago), and opened an office at the corner of Ogden Ave. and West Van Buren St.

Several changes have taken place in the *personnel* of the faculty of the Northwestern College of Dental Surgery. Professors Vigneron and Sperling have been succeeded by Drs. C. R. Baker and M. Stout.

Since issuing the prospectus the editors have received so much valuable matter for publication that they are compelled to defer the publication of reports of several societies and other matter until subsequent issues of the REVIEW.

Col. Edgar D. Swain, or, as his G. A. R. friends call him, "Ed," has returned from the Pacific coast, full of praises of the people of the New Eldorado. He attended the G. A. R. reunion, and never tires of reciting the beauties of the Golden Gate.

Dr. C. S. Stockton, of Newark, N. J., knowing the ferocity of the average "skeeter" in his principality, hied himself away to foreign shores, to enjoy a much needed rest, and returned in time to feel the shock of the recent earthquake on the Atlantic coast.

Dr. R. H. Kimball, a graduate of the class of '81, Univ. Penn., Dental Dept., who has been practicing in Chicago for the past six years, has sold out his office, and gone to seek his fortune in China. We wish him every success in the new field of labor he has chosen.

The Chicago Dental Club holds its monthly meetings at the Grand Pacific Hotel. At the last meeting Dr. A. E. Matteson read a paper on Irregularities of the Teeth. We hope to have reports of its deliberations in these columns when the genial secretary can find the time to forward them to this office.

A very practical method of retaining drainage tubes in abscesses located about the neck and face, consists in cutting an oblong strip of court plaster, with a hole in one end, through which a ligature is passed, to be tied to the tube. The plaster is then moistened and pressed into a suitable position to retain the tube in place.

It is estimated that there are now enrolled in the various medical, dental and pharmaceutical colleges in Chicago, no less than 1200 to 1500 students. This looks well for Chicago as a scientific educational center. This estimate does not include the Policlinic, Post-graduate Medical School or the School of Ophthalmology, and other special schools devoted to scientific teaching.

Dr. W. D. Miller, of Berlin, has been invited by the officers of Section VI. of the American Dental Association to make some original investigations in a particular direction relating to dental caries. If Dr. Miller consents to do the work, we may expect that a valuable contribution will be made to the literature of this subject at the next annual meeting, at Asheville, N. C.

On September 18, 1886, a charter was issued by the Secretary of State, for a new dental college in Chicago, to be called "The American College of Dental Surgery." Incorporators, James E. Ryan, M. D., T. Davis Fitch, M. D., S. J. Cooper, T. S. Huffaker, M. D. and C. F. Eshbaugh, D. D. S. The first session began on October 11th, and is to continue for six months.

Dr. A. W. Harlan, whose term of office expired on the Illinois State Board of Dental Examiners in July last, has been succeeded by R. Neal Lawrence, D. D. S.,

of Lincoln, Illinois. We hope that the doctor will now find time to devote his leisure moments to the preparation of the long expected work on materia medica and therapeutics, which is anxiously looked for by a large number of his friends.

Dr. H. J. McKellops, of St. Louis, has shown a simple but effective regulating apparatus, consisting of a plain narrow band of coin gold, the ends of which are looped and soldered, fitting around the posterior teeth and passing in and around those to be moved. The band is lengthened and shortened very simply by the use of a pair of crimping pliers, made for this purpose, and the necessary force for moving the teeth is obtained by the elasticity of the gold band.

The Odontological Society of Chicago very soon will issue a short treatise on "The Management of Pulpless Teeth." A committee has had the matter in charge during the past year, and at the last meeting of the society, the completed report was read for approval. We understand that the work was approved, and it necessarily follows that it will soon be in print. A treatise on this subject, however brief, will be gladly welcomed if it is carefully prepared and divested of obsolete methods.

The Chicago College of Dental Surgery began its fifth regular course of lectures on Monday evening, October 4th, 1886. Professor Lewis L. McArthur, M. D., delivered the opening address. The Dean, Professor Brophy, stated that there were one hundred matriculates present, and he confidently expected that by the end of the week more than one hundred and twenty-five students would be enrolled for the winter session. The college is located on the corner of Wabash avenue and Madison street, and is very handsomely equipped and conveniently arranged for the prosecution of the study of dentistry. The number of professors, lecturers, demonstrators and instructors was stated to be between forty and fifty.

The spring faculty of the Chicago College of Dental Surgery has introduced a very commendable feature in forming itself into a scientific circle, with the object of original scientific research, and have erected an apparatus for the purpose of cultivating micro-organisms. This method of engaging in studies and investigations might be recommended to practitioners in smaller cities especially. A circle of dentists, by small individual contributions, can purchase apparatus, microscopes, etc., for the use of all, which, if purchased for each one separately would be too expensive. Much benefit must result from such efforts if the organizers of clubs will go to work in earnest. We will gladly publish the results of such labors in these columns.

The opening of the School of Dentistry in the Meharry Medical Department of Central Tennessee College at Nashville, for the education of colored students last month, marks a new era in the progress of dentistry, in affording the colored race an opportunity to educate themselves, untrammelled by questions of race or color, in a school of their own. It is to be hoped that this college may receive its full quota of students, and send forth an army of educated colored men, who will elevate and educate their fellows in regard to their dental organs. Hitherto there has been no good opportunity for the colored man of education, sense or taste to be able to procure proper service at the hands of the white dentist. Most of them do not wish to have colored patients enter their offices, and if they condescend to do anything for them, it would be perhaps the extraction of a tooth in some dingy

corner of the laboratory. The colored population of the United States in 1880 numbered something over six and a half millions, and in the city of Chicago, a little more than two years ago, the colored population numbered over seven thousand five hundred. A large number of these people are well educated, many of them are well-to-do and respectable; they all unquestionably are in need of dental service, and they only need the opportunity to better appreciate dentistry. Indeed, it is very questionable whether the prevalent idea of good teeth among colored people is well founded. Our own observations do not bear out that assertion; the colored dentist of the future, it is hoped, will soon prove beyond question, that the teeth of his race are no exception to the common rule, regarding their liability to caries.

We have not heard much lately about the examination of the teeth of school-children in the public schools of Chicago. In England at the late meeting of the British Dental Association a paper was read on this subject by W. M. Fisher, L.D.S., of Dundee, Scotland, which we consider timely and of great value. How soon will the committee of the Chicago Dental Society go on with the work which was laid out such a long time ago?

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## OBITUARY.

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### FRANCIS PEABODY ABBOT, D. D. S.

A cable dispatch of October 12th, 1886, announced the decease of Dr. Francis Peabody Abbot, of Berlin, Germany. Dr. Abbot died in Dresden, October 11th, while on his way to Carlsbad. No particulars concerning his sudden taking off have been received up to the time of going to press. The whole dental world will be grieved and saddened at the suddenness of the demise of this well known exponent of American dentistry in Europe, and we are sure that his bereaved family will receive from every land words of sympathy and regret at the unexpected close of his honored career. We hope to be able in our next issue to present a sketch of his life and labors.



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Instruments and appliances for clinical departments will cost from \$25 to \$40.

Graduates of the College are admitted on payment of the matriculation fee only; graduates of other regular dental colleges on payment of matriculation fee and ten dollars.

Board, including light and fuel, can be obtained at a convenient distance from the College, at from four to six dollars a week.

The annual course of lectures will begin Monday, October 4th, 1886, and continue until March 31, 1887.

The spring course will begin Tuesday, April 5, 1887—the week following Commencement Day—and terminate the 22d of the following June.

Letters of inquiry should be addressed to

DR. TRUMAN W. BROPHY, Dean,

125 State Street, Chicago, Ill.

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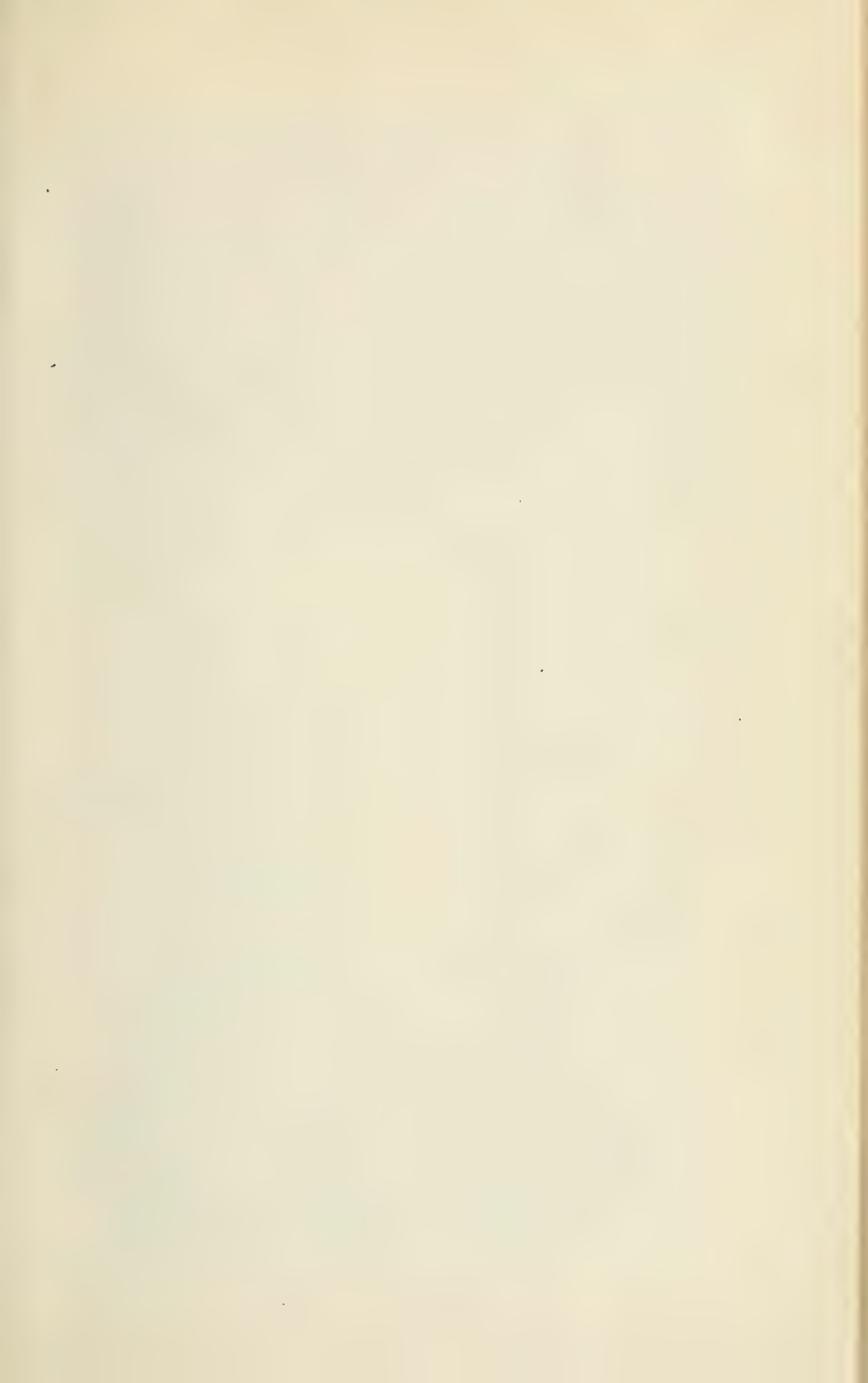
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### THE PERIOSTEUM AND PERIDENTAL MEMBRANES.

BY G. V. BLACK, M.D., D.D.S.,

Professor of Pathology in the Chicago College of Dental Surgery.

(Continued from page 14.)

#### DESCRIPTION OF ILLUSTRATIONS.

Fig. 17. Non-attached periosteum from the shaft of the femur of the kitten. *B.* Bone. *O.* Layer of osteoblasts. In the central portion of the figure they have been pulled slightly away from the bone, displaying the processes to advantage. It will be observed that the fibers of the periosteum do not enter the bone. *a.* Inner layer of fine white fibrous tissue (osteogenetic layer) showing the nuclei of the fibrous tissue and a number of developing connecting tissue cells, which probably become osteoblasts. *c.* Outer layer, or coarse fibrous layer, in which fusiform nuclei of the fibrous tissue is also rendered apparent by double staining with hematoxylin and carmine. *d.* Some remains of the reticular tissue connecting the superimposed tissue with the periosteum.

Fig. 18. Periosteum from the shaft of the tibia of the pig, lengthwise section, showing the complex arrangement of fibers in the coarse, or outer fibrous layer that sometimes occurs under muscles that perform sliding movements upon it. *B.* Bone. *O.* Layer of osteoblasts. The tissue has been pulled slightly away from the bone in mounting the section, and part of the osteoblasts have clung to the bone, some have clung to the tissues, while others are suspended midway, their processes clinging to each. *a.* Layer of fine fibers. Inner or osteogenetic layer of the periosteum. *b.* First lamella of the coarse or outer fibrous layer, the fibers of which are, in this case, circumferential, exposing the cut ends. It will be observed that there are ten lamellæ in the make-up of the outer layer, the lengthwise and circumferential fibers alternating. The ones marked *f*, and *i*, are very delicate ribbon-like forms, which have shifted from their normal position in the mounting of the section, so as to present their sides to view instead of their ends, thus displaying their structure to advantage. The illustration shows how readily separable these lamellæ are. *l.* Reticular tissue.

Fig. 19. Periosteum from the lower end of the femur of the kitten at a point where the enlarged end next the joint is being trimmed down for the elongation of

the shaft, showing the fibers of the periosteum included in, or entering the bone, forming its attachment, the absence of osteoblasts and the presence of osteoclasts by which the outer portions of the bone are being removed. *B.* Bone. *c.* Osteogenetic, or inner layer of periosteum. *d.* Outer layer, a part of which seems to have been torn away. *E.* A few circumferential fibers. *f, f, f.* Osteoblasts lying in the lacune of Howship, or excavations in the bone made by these cells.

Fig. 20. Attached periosteum from beneath the attachment of the muscles of the lower lip of the sheep. *a.* Bone. *B.* Osteoblasts, with the fibers emerging from the bone between them. *c.* Inner layer with fibers decussating and joining the inner side of the coarse, fibrous layer in opposite directions. This is rather an unusual form of this layer of the periosteum. *D.* Coarse, fibrous layer. *E.* Attachment of muscular fibers.

Fig. 21. The more usual form of the attached periosteum. *A.* Bone, showing the residual fibers (penetrating fibers of Sharpey) within its substance and passing out between the osteoblasts *B.* and breaking up into fine fibers, which form the internal layer of the periosteum. These are also seen protruding from the broken margins of the section at *g, g, g.* *D.* Blood vessels which are cut across. They occur mostly in the inner layer, very close to the under side of the outer layer. A number of them are seen. *H.* Small nerve bundles. *F.* Attachment of muscular fibres. It will be noted that the Haversian canals at *h, h, h, h,* and at other points, are filling up with bone that has no residual fibers.

Fig. 22. Network of elastic fibers from the coarse fibrous layer from a section of the same series, as Fig. 21, after dissolving out the coarse fibers with caustic potash. High power.

Fig. 23. Bone, with portion of inner layer of attached periosteum, and penetrating fibers. The section is cut across the Haversian canals, and it shows the manner of the formation of these in the surface of the growing bone at *a, a,* by the upward growth of spicule of bone which then spread out and join with others, thus bridging over and forming canals. At *b, b, b, b,* four Haversian canals are seen lined with osteoblasts. Around each of these, fresh bone is being deposited, which may be recognized by a slight difference in shade, but especially by the fact that the bone corpuscles lie in a different position from others in their neighborhood, and the fact that this bone has no residual fibers. It should be noted that this formation of canals immensely increases the area upon which osteoblasts may build.

Fig. 24. Bone, with a more solid growth of surface, and with osteoblasts much crowded between the fibers of the periosteum as they emerge from the bone. Only a part of the inner layer of periosteum is shown. *a, a.* Osteoblasts several layers deep between the fibers of the periosteum. *b, b.* Spicule of bone growing up into the periosteum, apparently following the line of a particular fiber. *C.* A Haversian canal that seems to have been excavated in the bone, and is being filled by deposit of new bone on its walls. This new deposit of bone is distinguished by a somewhat lighter shade, and the difference in the direction of the long axis of the bone corpuscles, and the absence of residual fibers. Osteoblasts appear in this portion of the canal. The margins of the secondary formation, show the bay-like forms usual in the absorption of bone. Above the line drawn across at *E,* no secondary bone is found, and osteoclasts, *g, g,* are seen instead of osteoblasts. In this portion the excavation is going on. In this way the bone, with residual fibers, is removed and bone deposited in which these do not appear.

## METHODS OF THE PREPARATION OF TISSUES.

Perhaps it would be well, before going farther, to indicate briefly the methods I have employed in the preparation of the tissues from which my studies and illustrations of those to be described have been made. These have been taken, for the most part, from young and small animals, such as the cat, lamb, pig, dog, etc. The human fetus, and also tissues taken from the adult, have been employed in sufficient amount to make reasonably good comparisons, but the difficulty of obtaining these sufficiently fresh to give the best results, is quite obvious. The time between the death of the animal and the immersion of the tissue in the fluids by which it is prepared for cutting, should be counted by minutes, never by hours. For this purpose I have used Muller's fluid and chromic acid, giving the preference to the former, and have usually added the acid for decalcification, after the first day. It has been considered important that very small bones be used, in order that the time of exposure to acids in the process of decalcification be as short as possible. It is exceedingly difficult to cut large bones into sufficiently small pieces, without disturbing the relations of the soft portions of the tissue, especially in the loosely attached portions of the periosteum. The injurious effect of acids has been closely studied, and it has been found that the element of *time* is, within certain limits, more important than the strength of the acid solution employed; that is to say, a tissue decalcified in one day with a three per cent. solution of nitric acid, and then thoroughly de-acidulated by copious ablution, will come under the lens in better condition than if exposed to one-half per cent. for five or six days.

The use of alcohol in hardening has been avoided as far as possible, on account of the shrinkage which it induces. Indeed, it has been limited to the dehydration of the tissue for the purpose of impregnation with the imbedding material, in cases in which this is demanded. Some sections of each class of tissue have been made without dehydration, or any form of impregnation, for purposes of comparison and the formation of conclusions as to the changes induced by the different materials used for these purposes. By this mode we are unable to obtain sections sufficiently thin and regular for general study, but may obtain scraps that will reveal the tissue characters for comparison. Such



studies demonstrate that all of the modes of impregnation yet used for the purpose of cutting sections, injure the tissues in some degree, and that this injury is very closely associated with the *time* the tissue is allowed to remain in the imbedding material. Of these I have used gum arabic, celloidin, bayberry tallow (the concrete expressed oil of *Laurus nobilis*, or bayberry tree), paraffin, and paraffin modified by additions of cosmoline. The finest sections may be cut in paraffin. The disposition of this material to curl up before the knife, is readily avoided by laying a piece of fine tissue paper wet with alcohol, upon it, and cutting under this. This paper also serves well to transfer the sections to fluids. The necessary subjection of the tissue to alcohol for dehydration, then to warm chloroform in the impregnation of the tissue, and the removal of the paraffin after cutting, is not without evil result. In this respect the bayberry tallow is better, as the use of chloroform is avoided, warm alcohol being sufficient both for impregnation, and solution and removal of the tallow after cutting. Each of these have given me better results, as to the final condition of the tissue, than the celloidin; but, in order to obtain good results, the *time* the tissue remains in the imbedding material must only be counted by minutes, never by hours; and if, after its removal, and placing the tissue in water, it does not swell out to its normal proportions in every part, which failure may be detected after sufficient experience by its appearance, it should be cast aside and a new effort made. The gum arabic method is suitable only for very small bits of tissue, on account of the *time* necessary for hardening large masses. Tissue may be bound up, or shrunken in any of these processes for a very short time, without losing its resiliency, or power of resuming its original condition, but if it is continued beyond a certain time, this is lost in a greater or less degree. Careful additions of acetic acid to the water will often assist in the restoration of condition of the tissue. The ordinary microtome has been used for cutting sections. The staining has been by carmine in its different forms—Picrocarmine, hematoxylin, osmic acid, and chloride of gold. Double stains of carmine, hematoxylin, and pigmenting (see below). Sections from each portion of tissue cut have been studied, mounted in glycerine jelly, plain, also plain after acetic acid, and in each of the above stains, and then these studies



repeated in similar mountings in balsam. The aniline dyes have been tried in tissues in which acids have been used to decalcify bones, but have not given me good results.

Pigmentation should be explained, as I do not know of the use of the process by others. It is done in two ways, making a diffusive or selective pigmentation as desired. Place the sections in osmic acid solution (one per cent.), and let them remain from half an hour to an hour. (1st.) Transfer to distilled water for half a minute, just long enough to remove the osmic acid from the surface, and at once place in a solution of hematoxylin, as prepared for staining—a thin solution is best—and allow them to remain until they have assumed a deep smoke or soot color, which will require but a few minutes. (2d.) Wash thoroughly in distilled water for half an hour to an hour, then transfer to solution of hematoxylin as before. The change to the soot color will be a little slower. Any purple color acquired from this solution may be removed by acetic acid without affecting the pigment. The sections may now be prepared and mounted in any manner desired, and will be found very transparent to transmitted light, provided the pigmenting has not been carried too far. In (1st) the pigmenting will affect all the tissues alike, is diffusive, but in such a way that all of the elements come fairly into view. In (2d) the pigmenting is selective, the osmic acid resisting removal by water is reduced as pigment by the hematoxylin. This pigmenting rests on the fact that a mixture of osmic acid and hematoxylin throws down an amorphous black deposit, and this is obtained in the tissue in such a fine state of division as to resemble a stain when the highest powers of the microscope are used. Some portions of the tissue hold the osmic acid—at least do not give it up to water very readily—hence the selective pigmenting of the tissues that are well washed after removal from the acid, before being submitted to the hematoxylin. In this way, ordinary epithelium may be made to resemble natural pigment cells, the cell body being pigmented deeply, while the nuclei and cementing substance remain transparent.

A word as to the illustrations. These are all made from tissues freshly prepared for the study of this subject, and are done with as much care as to accuracy of representation as I have been able to bestow. The manner of the representation

of the tissues generally employed, is in a large degree conventional, and my illustrations are no exception to the rule. That which I have made out to my own satisfaction, I have endeavored to represent clearly, avoiding the representation of either shadows or suppositions. I therefore make no claim that the pictures are *exact* representations of individual fields in my sections, but are rather what I make out to be the actual forms of the tissue elements and their relations to each other, after having made the best study of them that I am able to do at the present time.

#### THE PERIOSTEUM.

The periosteum forms the immediate covering of the bones. It is continuous at all points except those surfaces covered by the articular cartilages and the attachment of the ligaments and tendons.

It is not, therefore, continuous from bone to bone, except in those united by suture, as the cartilages mentioned uniformly clothe the ends of those united by joints. Each of the long bones, and most of the short also, has its individual periosteum, which encloses it as in a sack, and is closely adapted to all parts of its surface.

If the flesh is carefully removed from any of the long bones the periosteum will be seen to present a smooth, white, lustrous appearance, much like the surface of a tendon, over a large part of the surface, but at certain points which correspond with the attachment of muscles, or fascia, it will be left more or less ragged and dull, for at such points the superimposed tissues are firmly adherent and must be cut away with the knife. At all other places the tissues separate from it easily and smoothly, indeed, are not attached, or are attached only by a very slight network of reticular or elastic fibers which break away readily and, to the naked eye, leave no sign of their presence. If now we slit up the periosteum lengthwise the bone, along a smooth portion, and insert the handle of the scalpel beneath it, it will be found readily separable from the bone over the greater part of its surface. Indeed, the attachment seems to be but little more intimate than was that of the tissues to the outer surface. However, if the attachment be closely followed it will be seen that at many, or perhaps only a few points, fibers adhere to the bone, and are

broken. These are, in the main, very small blood-vessels that enter the bone from the periosteum, but occasionally a few fibers of the periosteum enter the bone also.

In the progress of the detachment a point is arrived at finally where this easy separation ceases abruptly, and the periosteum becomes firmly adherent to the bone. It is now found in the effort to continue the detachment that the periosteum is a very thin, tough, inelastic membrane that is torn with difficulty, but it is impossible to continue the separation from the bone otherwise than by the knife, and the extreme thinness of the membrane renders this difficult. An examination of these adherent points reveals the fact that they are, first, points at which some of the tissues are attached to the outer surface of the periosteum, as muscles or fascia; second, near the ends of the bones where the periosteum approaches the articular cartilages; third, wherever it approaches the insertion of tendons or ligaments; fourth, wherever mucous membranes, or the skin, seems adherent to the bones beneath, as at the entrance of the meatus auditorius, the gums, mucous membrane of the nose, etc. At all such points the periosteum is as firmly adherent to the bone as if it formed an integral portion of it, and serves as the medium of attachment for the superimposed tissues. Through this medium many attachments of muscles, fascia, etc., are effected, and these points of attachment will intercept and prevent the separation of the periosteum from the bones at many points. This feature of the anatomy of the periosteum has not yet been studied in detail. Yet its importance in the management of disease of the bones, especially the suppurative diseases, when pus is likely to find its way beneath the loosely attached periosteum, must be apparent to every surgeon. While I can not now undertake this part of the subject *in extenso*, I propose on another page to consider very closely the character of the attachment of the periosteum at different points.

*Histologically*, the periosteum is composed of fibrous tissue, in the meshes of which are found certain cellular elements. It presents for examination:

- 1st. An outer layer of coarse white fibrous tissue.
- 2nd. An inner layer of fine white fibrous tissue.
- 3rd. Elastic fibers.

4th. Penetrating fibers, or fibers of the periosteum that, in the growth of the bone, are included in its substance.

5th. Osteoblasts, or a layer of cells that lie between the periosteum and the bone.

6th. Osteoclasts—cells that absorb bone.

The white fibrous tissue is everywhere disposed in two layers. an inner and an outer; or a layer of coarse fibers forming the outer portion, and a layer of fine fibers forming the portion next to the bone. The yellow or elastic fibers are found mostly intermingled with the coarse fibrous layer. They are usually very difficult of observation, and do not, as a rule, appear in sections as ordinarily prepared.

#### OUTER LAYER.

The size and arrangement of the coarse fibers in the formation of the outer layer is exceedingly variable in different regions of the osseous system. On the long bones they are generally smaller than upon the short, while I have found the largest fibers about the bones of the face. The rule is that the periosteum, as a whole, is thicker and stronger at exposed points where the bones are near the surface, and is more delicate when deeply covered with other tissues. Hence we find it thin, and its fibers correspondingly delicate on the shafts of the long bones, especially such as the femur, humerus, etc.

In these positions the coarse fibers of the outer layer are small, and for the most part run parallel to the long axis of the bone. (See fig. 17.) The fibers are usually very much flattened, and the fine fibers of which they are formed, not very firmly bound together. Indeed, they are often disposed in ribbon-like layers, with the flat sides horizontal to the surface of the bone, and the edges of these are often joined in such a manner as to form a continuous sheet of fibrous material. This is especially the case when the periosteum is deeply covered with muscles which perform sliding motions on its surface. In such places this portion is often made up of a number of lamellæ thus formed, which are very loosely joined together, so that by careful manipulation it may be separated into a number of complete lamellæ. The fibers which constitute these layers do not all run in the direction of the long axis of the bone, but some are interposed which cross these at right angles, or in the direction of the circumference of



the bone, as shown in fig. 18, in a section cut lengthwise, the tibia of the pig. This example shows five layers of circumferential fibers, and those marked *f* and *i*, have shifted from their position in mounting the section in such a way as to present the sides of short sections to view, instead of the ends, and serves well to show how the fine fibers are joined into ribbon-like forms. The figure, as a whole, illustrates how readily the different layers are separable, though, as combined, they are calculated to give great strength, at the same time accommodating sliding movements readily.

I have endeavored to represent every portion of it just as it happened to lie in the preparation. This may be regarded as an example of the more complex arrangement of the coarse fibers, or outer layer, in the non-attached periosteum. The disposition of the fibers is usually much more simple, presenting fewer running in a circumferential direction until, finally, none whatever can be found.

This simpler form I have represented in fig. 17, from a lengthwise section from the femur of a kitten. Every gradation between these may be found. For this illustration a point has been selected where the outermost fibers have been broken by the needle in detaching the superimposed tissue. Some of the fibers beneath are also a little separated, and in the central part the layer of osteoblasts are pulled partly away from the bone, displaying their processes to advantage. It will be seen that the fine fibers, *a*, cease abruptly, giving place to the coarse fibers of the outer layer *c*. By comparing this illustration with fig. 21, and noting the difference in the size of the osteoblasts (for the illustrations are drawn with different powers) some idea will be gained of the difference in the size of the coarse fibers in different regions. In drawing fig. 17, the 12-inch immersion lens was used, while in fig. 21 the  $\frac{1}{4}$ -inch dry was substituted. These fibers (fig. 17) are round or irregularly flattened, and show none of the ribbon-like forms seen in fig. 18. It is the form of this layer most commonly met with on the shafts of the long bones, though the gradations between these two figures are sufficiently common. In both of these figures I have illustrated the delicate reticular tissue by which the periosteum is very loosely attached to the superimposed parts.

As the ends of the bones are approached the periosteum is thinner, and often the coarse fibrous layer is found lying almost flat on the bone, most of the inner layer having disappeared, and at many points the osteoblasts are not to be seen. (Fig. 19.) At frequent intervals, however, sometimes continuously for a space, osteoclasts (*f. f. f.*) have taken their place, and are trimming down the surface of the enlarged ends. In this region the fibers of the periosteum enter the bone and in this way form the firm attachments noticed at their ends. (Fig. 19.) This happens to such an extent that, in pursuing the study of sections cut lengthwise the shaft of the bone, up to the articular cartilage, one is impressed with the idea that the whole of the periosteum has sunk beneath the surface of the bone. As this occurs the fibers of the outermost parts of the coarse fibrous layer often seem to unite into a fibrous sheet which is inserted finally at the margin or fringe of the articular cartilage, or into the cartilage itself.

On the bones of the face and other positions where the periosteum lies near the surface of the tissues, the outer layer is composed of very large, white fibers, with which a small quantity of yellow elastic fibers is mingled. The white fibers form an intimate network, being closely interwoven with each other. (See figs. 20 D, and 21 E.) Sections cut in almost any direction will show longitudinal fibers, but a disposition to run in the direction of the pull or strain of muscles or other tissues attached to the periosteum may be seen; otherwise the direction will have a tendency to follow the long axis of the formation of the bone. In either case a considerable number take a transverse or diagonal direction, passing through the meshes formed by the principal fibers. None of these fibers take a direction perpendicular to the surface of the bone, but they are so disposed that a fiber that may be on the inner surface of the layer at one point, may at a little distance arrive at the outer surface. In this way the fibers seem to be plaited together (fig. 21 E), sometimes in a very compact layer only a few fibers in thickness, and sometimes the fibers are so disposed as to form several lamellæ, held together by occasional, or it may be very frequent, passage of fibers from the one layer to the other, or by a network of elastic fibers only. (Fig. 22.) Usually, even in cases of considerable thickness of

this layer, coarse fibers may be traced that in their longitudinal course gradually approach one or the other surface.

The thickness of this layer is very variable. Occasionally it is only the thickness of two or three coarse fibers superimposed on each other; rarely the coarse, fibrous layer is condensed into a single membranous sheet, to which the overlying tissues are attached. On the other hand, I have seen the thickness of  $\frac{1}{4}$ -inch in the human subject. I am not sure that the latter was entirely normal. The thinner portions are often those to which muscles are attached. Indeed, the statement is made by Krause (*Allgemeine und Microscopische Anatomie*, p. 68) that this layer is sometimes wanting at the points of attachment of muscles. Although I have made many cuttings through such points, I have never found this layer absent except when the muscle was attached to the bone by well-defined tendon, in which case none of the elements of the periosteum whatever remain, but the fibers of the tendon pursue their course uninterruptedly into the surface of the bone.

The characters described above are present in the coarse fibrous layer of the periosteum wherever it is found, without exception. At a few points it is blended with other fibrous tissues, especially with the mucous membranes and skin, as it is seen in the gums, and at the entrance of the opening of the external ear, and other points at which the skin is rigidly adherent. In these cases, if we proceed from the surface of the bone outwards, the first coarse fibers are always disposed as in the periosteum at other points, *i. e.*, lie horizontal to the surface of the bone; but after passing a few of these, the horizontal direction of the fibers is sometimes gradually, sometimes abruptly, lost, and the character of the tissue changes to the tangled fibrous forms of the skin, the gums, areolar tissue, or whatever may be the superimposed fibrous tissue.

Often, however, the periosteum remains entirely distinct from the superimposed tissue, and is united with it only by a scanty network of elastic fibers which allow of free sliding motions of the one tissue upon the other. All grades of connection from this latter to the intimate commingling of the coarse fibers may be found. Many of the smaller muscles, and larger ones that have their attachment by a broad base, are attached directly to



this layer of the periosteum. In case of the muscles, the sarcolemma of each individual muscular fiber is attached directly to these coarse fibers. (Figs. 20 and 21.) In a few cases fine fibers may be seen traversing the layer of horizontal fibers of the periosteum in a perpendicular direction, seeming to be condensed extensions of the sarcolemma as shown in Fig. 21. Occasionally these pass entirely through the coarse fibrous layer, and then appear to be continuous with the fibers of the internal layer. The fasciæ are attached to the periosteum by their fibers blending, or becoming continuous with those of its external layer.

#### INTERNAL LAYER.

The internal layer is of an entirely different character from the outer, both in the nature of its fibers and in their arrangement. It also presents great diversity of arrangement. In the consideration of this layer it will be convenient to divide it into *attached* and *non-attached*, as it presents notably different characters in its fibrous structure, and in the relation of its fibers to the bone which it clothes.

The *non-attached inner layer* of the periosteum is separated from the bone almost completely by an intervening layer of polygonal or flattened cells, the osteoblasts. (Figs. 17 and 18). None of its fibers pass into the bone; while in the *attached* periosteum those of the inner layer do pass into it, or seem to spring out of it. (Figs. 21, 23 and 24). It is composed of the finest and most delicate white connective tissue fibers, with which there are no coarse white, or yellow elastic fibers associated. On the short bones these fibers seem not to be disposed in any particular direction, or upon any specific plan that I have been able to detect. They decussate freely in every direction. On the long bones the fibers of this layer are more generally parallel to the long axis of the bone, as illustrated in fig. 21, though not universally so. In all young animals these have in their meshes a considerable number of young connective tissue cells in various stages of development, in addition to the fusiform nuclei of the white fibrous tissue. In the main the fibers lying next to the layer of osteoblasts have a course horizontal to the bone; but in the short bones, or in the neighborhood of attachments this is soon changed to a direction more



inclined towards the coarse fibrous layer, and the particular band or group we attempt to follow will become intermingled with others and lost. At another point immediately adjacent, the fibers are seen cut across either directly or diagonally; but even among these will be seen those that are horizontal to the plane of the section. While there seems to be no uniformity in the direction of the fibers, the fibrous appearance is maintained, giving the impression of an intimate intermingling rather than of a network. This appearance may be much modified by the manner in which the section is prepared for observation. If it be with a good selective stain this layer in young animals may appear distinctly cellular, the fibers being much hidden, while the cells are made prominent. If on the other hand the fibers be rendered prominent by diffusive carmine staining, osmic acid, or pigmenting, the tissue will give the impression that it is almost wholly fibrous. The various plans of preparation should be employed in its study. The fibers do not seem to branch and anastomose as in a net, but rather to decussate with the utmost freedom, rarely forming groups or bands of any considerable number running in a common direction. However, it is apparent that in the portion next to the layer of osteoblasts they are more inclined to a direction horizontal to the surface of the bone; while in the portions next to the coarse fibrous layer their general direction has become perpendicular, or more or less inclined to the surface of the bone.

In the long bones the fibers of this layer in the non-attached regions very generally lie horizontal to the surface of the bone throughout its thickness, as is shown in figs. 17 and 18, and run in the direction of its long axis. The tissue is loose in texture and somewhat embryonal in its character immediately adjacent to the layer of osteoblasts, but becomes more prominently fibrous as the bone is receded from. Its attachments on either side are very loose and easily broken up—so much so that it is difficult to keep the parts in position while mounting the sections. In those sections in which the relations of the parts are a little disturbed by spreading apart, we often obtain the best displays of the tissue elements, and it can be seen that the osteoblasts have processes which pass in among the fibers lying next to them, and also into the bone, forming a sort of attachment to it, which is,

however, very easily broken up. This is well shown in figs. 17 and 18. This latter form is common to the shafts of the long bones, and is almost universally present in the non-attached regions, which may in general be expected, except in the region of the attachments of muscles, fascia, ligaments, or the approach to the ends of the bones. In such positions the form of the attached periosteum is assumed.

In the *attached portions of the periosteum* the fibers of the internal layer exhibit a definite arrangement. This presents certain variations at different points, but these are only modifications of a definite plan. Here the fibers are not separated from the bone by the layer of the osteoblasts, but *spring directly out of the bone itself*, and the osteoblasts are seen to be disposed between the fibers, as in figs. 20, 21, 23 and 24. Perhaps a more correct statement would be that the fibers spring out of the bone between the osteoblasts.

At some points the former statements would be the more correct, for the reason that the fibers occupy the greater amount of territory, so that the osteoblasts are crowded into various forms to accommodate them. Every grade, from an occasional fiber passing out of the bone between the osteoblasts, to an increase in numbers and size, which represents the insertion of the tendon, in which no osteoblasts are present between the fibers.

In the attached portions then, the fibers of the inner layer of the periosteum spring directly out of the bone. In order that this may be well seen it is absolutely necessary that extremely thin sections be cut parallel to the fibers as they emerge from the bone, and in general this will also give a good view of the arrangement of the fibers of this layer of the periosteum, for the fibers pursue the same general course until they reach the inner surface of the coarse fibrous layer. Each of these fibers, after passing out of the bone, or immediately after rising above the osteoblasts between them, breaks up into a tuft of very fine fibers; indeed, in many sections it is shown that that which in the main appears as rather a coarse fiber as it makes its exit from the bone, is really a compact bundle of very fine ones. These on separating, spread out fanlike, and intermingling and decussating freely with others, take their way perpendicularly, or inclined

somewhat, to the surface of the bone to the inner surface of the coarse fibrous layer to which they are attached. The arrangement of the fibers as they pass from the bone to the coarse fibrous layer varies greatly in different positions. The most common form seen is that in which all of them pass at more or less inclination to the perpendicular, and join the coarse fibrous layer at an acute angle as shown in fig. 21. Yet every angle from about 45 to 90 degrees may be met with. Occasionally, however, we see them joining the coarse layer in inverse directions, decussating with others as shown in fig. 20. It is quite rare that the fibers join the coarse layer at right angles. In many instances their decussation in this layer is much more limited, and they pass quite directly from the bone to the coarse layer, forming a very regular sheet of fibers that are almost parallel. This layer has no elastic fibers, or at least they must be rare. Some observers state that these are found here, but I have repeatedly made the examination in the manner detailed below, without finding them.

#### ELASTIC FIBERS.

*Elastic fibers* form a network in the coarse fibrous layer that is very difficult to see without special preparation. This is partly on account of the fineness of the fibers themselves, but more especially owing to their relations to the coarse ones. In fine sections stained diffusely with carmine they may be imperfectly seen as white lines, but they are studied to best advantage by dissolving out the white fibers on the stage of the microscope. If this is done with sufficient care their arrangement can be quite accurately made out. This is done as follows: Place the section on the slide in water, lay on a cover glass, and carefully dry the slide at its edges; now fasten the cover securely at two points, preferably next the edges of the slide, with a little gutta-percha dissolved in chloroform, with balsam, or with wax. Now having placed the slide on the stage of the microscope in such position that it will be inclined from end to end (it may lie flat if preferred), lay on a piece of blotting paper cut to fit the circle of the cover glass (a square cover glass may be used), and lay it on the highest end of the slide in such a position that it will touch all of the higher edge of the cover glass not covered by the gutta-percha. Also lay a piece of blotting paper on the opposite end



of the slide, so that it will touch the margin of the cover glass. Here a central point of contact is sufficient. Thus prepared, saturate the upper bit of blotting paper with a strong solution of caustic potash (33 per cent. is best). This will gradually pass through under the cover and be absorbed by the paper below. A fresh drop should be added every few minutes continuously for several hours. The white fibers will first swell and become transparent, and the elastic fibers meantime will come into view. Finally all of the white fibrous tissue will slowly melt down and disappear, and the only tissue left on the slide will be the elastic fibers and some remains of the bone.

This process may be checked at any stage by substituting distilled water for the potash solution, and if this is followed by glycerine, and glycerine jelly, a permanent mount of the object can be effected. It must be borne in mind that the solution of the tissue can not be stopped at once, and the particular stage desired for the preparation must be anticipated. The washing with distilled water must be continued for a considerable time to remove all of the potash.

If the process of the solution of the tissue be closely watched it will readily be discovered that the elastic fibers form a network in which the coarse fibers of the periosteum are inclosed, or that the elastic fibers are entwined about the white in such a manner as to prevent their separation, or, if they are somewhat separated by a strain, will bring them back by their elasticity. I have illustrated such a network in fig. 22, taken from a section from the lower jaw of the same series as that represented in fig. 21. They are not uniformly distributed in the coarse fibrous layer, but seem to be most plentiful where muscles are attached to a rather thick outer layer, and the regions of the attachment of the mucous membranes. Along the shafts of the long bones I have usually found very few, and these seem not to penetrate the periosteum deeply but are, indeed, usually joined to its surface, and serve to make a very loose attachment of the superimposed tissue.

The inner layer or fine fibrous tissue of the periosteum is generally destitute of elastic fibers. Only once have I seen a few of these penetrating to the surface of the bone. Frequently I have seen a few fibers passing some distance into this layer, but generally they are confined to its outer margin.



*The blood-vessels* of the periosteum are quite numerous, and present considerable variation in different regions. On the shafts of the long bones the larger vessels usually run in a direction parallel to the long axis of the bone, and lie between the periosteum and the superimposed tissues, or on the surface of the periosteum. These branch laterally, and anastomose in such a manner as to form a tolerably continuous network. This network receives here and there branches from the superimposed tissues. In some situations, especially in the attached portions, this network lies immediately beneath the coarse fibrous layers, or in the outer part of the internal layer, in many instances as nearly between them as is possible. (Fig. 21 D). However, in those situations in which the coarse fibrous layer is thickened by the formation of two or more lamellæ, the network of blood vessels is often found between these, a circumstance which has given rise to the statement by various authorities that the blood-vessels of the periosteum are found mostly in the outer layer. In my observation there has been much more irregularity in the blood-vessels of the periosteum of the short bones, which, I may say, would naturally be expected, both as to the position in the individual layers, and the regularity of the network formed. From the network of vessels thus formed in any of these positions frequent capillary branches are given off, also occasional larger vessels, which pass down through the fibers of the internal coat and enter the Haversian canals of the bone. In the attached forms of this coat, these branches very generally follow the direction of the main trend of the fibers of this portion of the periosteum, and in a few localities they are quite numerous, especially about the bones of the face, and notably over the surfaces of the alveolar processes. In the portions of the periosteum, with which the fibers of the mucous membranes, or the skin, are intimately blended, the position of the blood-vessels is notably irregular; indeed, they seem to pertain rather to the superimposed tissue than to the periosteum, and send frequent branches through the latter to the Haversian canals of the bone.

Occasionally I have noted a plexus of vessels in the internal layer very close to the layer of osteoblasts, but these are very small and infrequent.

*The nerves* of the periosteum are generally few in number;

however, a considerable number of the larger vessels are accompanied by a small bundle of nerves, which are probably distributed mostly to the blood-vessels themselves. They enter the bones with most of the larger branches of the blood-vessels. At some points, nerves passing through the periosteum to enter the canals of the bone are very frequent. These are points where the nerves are required by organs situated within the bone. The supply of the periodental membranes renders them frequent in the periosteum of the alveolar processes.

TO BE CONTINUED.

### DENTAL EDUCATION IN THE UNITED STATES.

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

This short paper is not intended to deal with the subject of education in the usual sense, but mainly for the purpose of throwing light upon the conditions under which the subject of education is now fostered in the United States, by its schools.

Notwithstanding the fact that dentistry owes the largest portion of its success, and its development, to American dentists, the systems and methods of education are often severely criticized by the thinking men and educators of Europe. Indeed, this is not only true of our profession exclusively, but of all others, and even our public institutions of learning often receive unfavorable comment. To some measure, the method of dental instruction in vogue in this country has deserved the criticisms pronounced upon it, but to a great extent injustice has been done our schools by the fictitious institutions which flourished some years ago. At present, however, the education of dentists in the United States has attained a healthy, honorable, advanced standing, and it may be said that now and in the future, proportionately, the education of the dentist will be more complete than that of the physician.

True, there is still room for improvement. A critical examination of our colleges will suggest reforms in many directions, none of which, however, are of such a nature as to seriously impair the possibility of any one obtaining the best education at any school of the world, in both the theoretical and practical branches.

One of the shortcomings which I wish to notice here, and which, I believe, is general in all our schools, is the lack of educating the dentist to the proper appreciation of prophylaxis. The student, as he now leaves the portals of the college, is too much the dentist, mechanic and operator, and falls short in being the doctor and teacher. His time has been occupied with practical subjects, his energies have been bent in two directions, namely, and substantially, to fill teeth and make dentures. He has learned how to treat diseased teeth, and how to save, partially and fully replace losses of structure, but he has failed to learn that the work of the majority of dentists of to-day fails because of the ignorance of the masses in general.

Many dentists, in consequence of not having had the idea firmly impressed upon them that without the proper education of the people, all labor is worthless, plod on for years, perhaps, without in a single instance standing before their patients as doctors—teachers. They have stood there perhaps faithfully as operators, as mechanics, and, perchance, even as scientific men; but, notwithstanding all, they have failed to make good their title as teachers. Hence, dentistry is not making as rapid a progress in the direction of education and prevention as it should. Almost perfection is attained in methods of repairing destruction and replacing loss of dental tissue, but there is not yet the full appreciation and understanding of preventing the necessity of such repairing and replacing.

An earnest, serious impression should be made upon the student, before he leaves the college halls, of the grave importance of these questions. He should understand that he fails to perform his mission unless he proves himself an educator of the people, as well as a good, conscientious, honest operator.

The colleges in the United States are now, perhaps, more numerous than the demand justifies, the motives by which some of them originated are neither honorable nor commendable; yet they have their *raison d'être*; they are here, perchance unconsciously, for the purpose of furthering that object which all who love their profession hope for; they are multiplying without causes or reasons other than personal and selfish, and though these may accomplish what a few good, honest schools could never attain—recognition by the State—by their rapid multiplication and nec-

essary rivalry, in course of time the attention of State governments and possibly even that of the National government, will be called to the subject, and the final desideratum — Government control of educational institutions—will be the result.

The condition of dental education is well illustrated in the subjoined table, containing reliable statistics up to the present time. Only the colleges of the United States are therein noted, and, aside from them, there is but one other dental school on the North American continent. The same facts given in regard to it, are as follows :

The Royal College of Dental Surgeons is located at the corner of Richmond and Victoria streets, Toronto, Province of Ontario, Canada. It was organized in 1875. L. Teskey, M. D., Registrar of the Faculty, 185 Church street, Toronto. The corps of instructors consists of four resident professors, six resident and one non-resident lecturers, demonstrators and clinical instructors. It confers the degrees of M. D. S. (Master of Dental Surgery), and L. D. S. (Licentiate of Dental Surgery), and at its last commencement conferred the latter degree on nineteen candidates. On November 15, 1886, there were enrolled thirty-seven matriculates.

The table above referred to shows that there are now in the United States 26 colleges, distributed in 17 cities of 14 States and the District of Columbia; that at the last commencement, those then in existence graduated, in round numbers, 500 students, and that in all the schools (except in the Dental Department of the University of Tennessee, from whence no information could be obtained, and the Louisville College of Dentistry, which has not yet commenced its sessions), there were enrolled, on November 15, 1886, 1,592 students.



## PROCEEDINGS OF SOCIETIES.

## OHIO STATE DENTAL SOCIETY.

SECOND ANNUAL MEETING, TOLEDO, OCTOBER 26, 27 AND 28, 1886.

REPORTED BY W. H. WHITSLAR, M. D., D. D. S.

*(Continued from page 29.)*

President REHWINKEL announced the receipt of a pamphlet from Dr. W. J. Younger, of San Francisco, Cal., on "Implantation of Teeth." On motion, it was read by Dr. Metcalf. (It has already appeared in other journals, and in consequence we do not present the usual abstract.)

The subject being open for discussion, Dr. Harroun said he had seen Dr. Younger operate. He was a fearless operator, and willing to undertake anything. He is a genius, and he wouldn't be surprised to hear of greater feats from his hands.

Dr. J. TAFT said his first impression was one of incredulity, but, from the papers we have had from this gentleman, and these operations having been witnessed by men whom we know for their honesty, we can not but come to the conclusion that there is something in the method to commend. What will be the hereafter, time only can tell.

Dr. H. A. SMITH said it was the disease of the sockets that gave the failures in replanting. Dr. Younger drills out the sockets, and he (Dr. Smith) must say that it is contrary to all laws of physiology that spontaneous vitality can result, as it would seem, from these old teeth being replanted. This operation would remind one of seeds that are kept a long time, their outer coverings becoming hard and dry. We had no assurance that there is a vital union between tooth and alveolus. The teeth are dowelled in by new formations attached to the sides of the tooth and alveolus, the tooth being retained mechanically. He believes that there is a slow process of absorption. It is too soon to form an opinion of the success of the operation.

Dr. HARROUN said, in answer to the question now raised, he would reply that Dr. Younger removes the pulp of the tooth.

Meeting adjourned till 7:30 P. M.

## EVENING SESSION — DISCUSSION CONTINUED.

Dr. LYDER said he had a problem to propound. In 1874 he had an alveolar abscess upon the root of an upper central incisor, located half way from the apex of the tooth. Supposing, of course, that the pulp was dead, he had Dr. Jennings drill into the pulp cavity, when, to his surprise, it was found alive. The tooth was afterward extracted and replanted; to-day it remains firm. The margin of the gum was healthy, the pulp alive, and the abscess midway on the root. Why the latter? He also had an abscess on the lateral incisor root, on the same side of the mouth as the other tooth spoken of, and in the same position.

Dr. STEPHAN had had the same experience with a cuspid tooth, and was satisfied that the pulp was still alive.

Dr. HARROUN had found abscesses with live pulps in the teeth.

Dr. SIDDALL had met with one case where there was an abscess of the third molar; drilled into pulp-chamber and found it alive.

Dr. JENNINGS found in Dr. Lyder's tooth a good, healthy, working pulp, and a healthy (?) abscess, on the side of the root.

Dr. H. A. SMITH inquired if Dr. Lyder's tooth was carious?

Dr. LYDER replied that it had a small cavity which was filled.

Dr. SMITH asked if Dr. Jennings had examined along the alveolus, to ascertain if there was a lesion from the filling? Might there not be an irritation from the filling extending upwards into the alveolus?

Dr. JENNINGS said that the margins of the gum were healthy. The fistulous opening was directly opposite the abscess. There was no sinuous opening extending from the abscess to the side of the gum.

Dr. SMITH said a pulp does not always manifest life because there is pain. The pressure often upon some distant point will cause pain at another.

Dr. BARNES remarked that Dr. Stephan's abscess was about half way to the apex of the root. There was a space between the gum and tooth. He had a case where he tested with ice and hot instruments, and found no sensation of pain. He then drilled into the pulp-chamber, and found it alive.

Dr. TABER's daughter has trouble with an abscess upon the side of a living tooth, which recurs at intervals.

Subject passed.

WEDNESDAY, MORNING SESSION.

Clinics were given by Dr. Rehwinkel, demonstrating the Herbst method, and Dr. Brophy, of Chicago, who demonstrated the use of his band matrix.

Dr. REHWINKEL prefaced his clinic by some remarks, as follows :

*Gentlemen:* This principle of the Herbst method is not a new one. It has been used years ago by some of our oldest operators, by means of hand pressure in rotating the instrument. Whatever may be said of any single method of filling teeth, and no matter how well fillings may be made by that method, I do not accept it as a whole for every case. There will in many instances be a failure of the one process at the cervical borders of the filling. Many who took up this method, at first had failures because of their faulty manipulation. Besides faulty manipulation there is something else at the bottom of the trouble. The gold to be used should be Wolrab's, prepared in Germany, which at present is the best. I have no doubt but that our American manufacturers will soon be equal to the occasion and supply our wants. Ever since Dr. Flagg created his "New Departure," there has been a better condition of professional knowledge, and we are now in just the right frame of mind to accept the Herbst method. Our old operators will remember the difficulties of operating years ago, when we had soft foil and none of the improvements that we now have. But we made good fillings in those days, nevertheless, and when I now see one of my fillings, put in twenty years ago, I look upon it with pride, because it has done its duty. We used to have crystal gold, but it has passed out of use generally. The same laws of physics that to-day govern Herbst in his packing of gold, are the same as those of years ago. Now many claim that gold can not be packed into obscure places by the Herbst method. But Dr. Herbst does pack gold into out-of-the-way places by that rotary power with the hand, similar to that of years ago. Dr. Herbst is an enthusiast. Several years ago he realized in what a deplorable condition dentistry was in Ger-

many, and, chafing under such knowledge, led him to try to make an advance. He realized how dependent they were upon American ideas. So he began to experiment with his method, and has practiced it for six or seven years before giving it to the profession. But, gentlemen, Dr. Herbst, after being in America, and seeing the operations of some of our best operators, does not advise us to adopt this method entirely, because it requires much practice. He would have you unite it with Dr. Atkinson's mallet. It is better, he says, to rely on the mallet in putting on the last pieces of gold.

I first mentioned this system of operating at one of our meetings in Columbus. The difficulty with this method is its novelty. We don't know how to proceed. An indispensable appliance is the matrix. All the walls of the cavity should be intact. Dr. Herbst is very candid and generous. He came to our country, tells us many things, shows us how to make and do, and, withal, does not ask a single cent; whereas we have many who are inventors, but who will get from us all the money they can.

Then a description of some of Dr. Herbst's methods was given, and the doctor proceeded with a practical demonstration. When completed, the filling was considered well executed.

#### EVENING SESSION.

The session opened with a paper by Dr. Allport on the Herbst method, which is substantially as follows:

When Herbst's method came into notice two years ago, he expressed the opinion that the method was a good one. He was glad to learn of Herbst's coming to this country. Personally, he likes Herbst; thinks he is a perfect gentleman, and very ingenious. The idea of lining the cavity to be filled, with soft gold is correct, and thinks that good fillings can be made by the method. In early days of practice many used crystal gold. Because good fillings can be made by the method, he would not advise full acceptance of it. Crystal gold is now abandoned by many. By the new method remote corners of the cavity can not be reached. It must be done with the use of the hand plugger, which gives the gold proper adaptation. A combination of the methods, old and new, is, of course, valuable. A great trouble with



this new method is the necessity of cutting away large portions of the tooth, amounting almost to malpractice. Using non-cohesive and cohesive gold together, is better than using cohesive alone for an entire cavity. The Herbst method does not save time. He had seen Herbst, Rehwinkel, and Marshall fill, and he had seen better fillings made in the ordinary way in less time. There is nothing to justify the general adoption of the method. As an adjunct it may be useful. It may lessen danger of fracture of thin walls. A tribute was paid to the genius of Herbst as the introducer of many new and novel appliances.

## DISCUSSION.

Dr. REHWINKEL said Dr. Allport dwells on the time saved in filling. Dr. Allport has certainly seen Dr. Herbst operate at a disadvantage. I have seen Dr. Herbst perform at clinics in New York at the office of Dr. Bödecker and make fillings in ten or fifteen minutes that Dr. A. could not do in twenty-five minutes. As to sacrificing tooth-structure, I beg leave to differ with Dr. Allport; Dr. Herbst is very particular about that point, and removes only the decayed portions. Herbst uses no clumsy instruments; some are as fine as the point of a needle. He undertakes the saving of teeth that I could not save. The principle is of great value. You discard retaining points, and the cervical borders are made perfect. To lay aside everything but this method is not to be expected. It requires good practice. Every system has points to be looked after, and this demands experiment. One very good thing that Dr. H. showed was taking a pellet of gold and flattening it between the fingers, then coating one side with copal-ether varnish to make it stick to the sides of a cavity, which afterwards he filled with amalgam in cases where a large gold filling would not be admissible or could not be afforded; the amalgam then does not show through the thin enamel.

Dr. J. TAFT endorsed Dr. Rehwinkel's sentiments. He was prejudiced against the method at first, but his prejudice has all been removed. There was something in the man and something in the manner of his operations that entirely dispelled all his incredulity. Many points impressed him. The larger portion of the gold was condensed with engine instruments. He exercised great care in

his operations, especially about the borders of the cavity, by using sharp-pointed hand-pluggers. Places inaccessible with the engine points were thoroughly packed by hand pressure. The rapidity of execution is more than by the ordinary way. In putting in the first pieces of gold they are conformed by the use of cotton pellets. The gold is pressed to the sides of the cavity by the cotton and matted down, then gone over with a burnisher. There is no drawing from the sides of the cavity. We sometimes adhere to our old methods; it is better, however, to take up the best things.

Dr. CALLAHAN inquired if the cotton revolved on the gold?

Dr. TAFT replied, "No, sir; but a burnisher revolves *over* the cotton."

Dr. BUTLER has not seen any mention that the walls of the cavity must be continuous for the success of the operation.

Dr. REHWINKEL insists that there should be no retaining pits. Suppose a small portion of the walls be fractured as often happens, what becomes of the whole mass when there is occlusion? It has been claimed that the filling should be made to retain the tooth substance as well as tooth retaining the filling. Am not in favor of deep retaining points. Without angles and pits the method is questionable when the filing is on the masticating surface. The stretching of matrix admits of gold overlapping the cervical borders. He doubts if as much tooth substance is sacrificed by this method as by those who use the electric mallet.

Dr. BROPHY said he was much pleased to meet the Ohio State Dental Society, and liked the plan of having business done by an Executive Board, which facilitated the progress of the meeting. He knew little of Herbst's method except that he had seen him operate. Have not used the method yet. The reinstatement of the use of soft gold is hailed with pleasure. Soft gold should not have been abandoned twenty years ago. We can make more perfect fillings with it than with cohesive gold and the mallet. Retaining points are unnecessary. Soft gold can be made to remain without the so-called retaining pits. To make pits is the most painful part of the operation, and when they are deep, thermal changes affect the pulp, causing congestion and other phenomena. He would rather have as much tooth sub-

stance as possible between the pulp and the filling. The principal objection to the Herbst method is the matrix. I do not consider it proper to *wedge* the edge of the matrix against the cervical border. Introducing the wedge presses against the gums, and does not allow the gold to overlap the edge of the cavity. Now, with a steel spring band as a matrix, and a wedge-shaped plugger, he carries the gold over the border, and when sealed tightly the matrix is tightened, and if the gold is crowded in, the filling must be perfect. The retaining should be done where there is the least strain. Gold and tinfoil, equal parts, constitutes the commencement of his fillings; he then adds soft gold, finishing with No. 60 to complete the filling. Dr. Miller of Berlin advocates the use of gold and tin combined, his conclusions having been arrived at after a series of experiments, which proves that the combination is better to adapt to the walls, and that it has a prophylactic property. Slight moisture does not appear to affect its working qualities. It is especially good for filling children's teeth. Drs. Miller, Abbot and Harlan have all written upon the subject. He uses No. 4 gold, each sheet being cut into three strips. One of gold and one of tin are placed together and twisted like a rope. Cohesive foil will ball while non-cohesive spreads.

Dr. LYDER wished to know how to proceed when the cavity extends lower down upon the tooth?

Dr. BROPHY has devised a lip that dips down. This lip is brought to bear upon the silk ligature, and the ligature carries the rubber down lower. Gold and tin, or tin alone, is just the thing for these cavities.

Dr. KEELY asked if pure tin preserves better than gold at the cervical border?

Dr. BROPHY answered that it does and that he has great respect for the older members of the profession who tell us that tin makes a better filling at the cervical borders than gold. But he thought it might be possible that if gold was perfectly adapted it would do as well.

Dr. ALLPORT said, it gives better results to use non-cohesive gold than cohesive, but you certainly can not work around an angle with the straight points as in Herbst's method. At the cervical borders tin is better. It is antiseptic by its production

of sulphide of tin. The sulphide fills up the little interstices and keeps out the ferments.

Dr. HARLAN said that the Herbst method was not new, for he remembered that Dr. J. Taft, as far back as 1874, planished gold into a tooth before the Illinois State Dental Society. Had not Shumway of Mass., and Chance of Oregon and others advocated the planishing method in years gone by? What is the object of filling teeth? To merely fill holes or to restore the contour? He thought that this method could not be generally adopted because not one half the cavities which we meet could be filled by adopting it. Any method of filling teeth which depends on a matrix to retain the gold while introducing it, does not commend itself to dentists who already have a better system to operate by, and which has stood the test of time. It is no argument against it that tooth material is sacrificed, because the old soft-gold workers sacrificed still more structure than Herbst does. He believed that it might do for labial, buccal, and crown cavities, but would not place dependence on it when it came to restoration of contour. Does any one suppose that by rotating a round instrument over gold with the engine that soft gold will become cohesive? It is absurd. You may take a half-dozen leaves of No. 4 soft gold (and I mean non-cohesive when I say soft) and subject them to pressure, even to hundreds of pounds, and when the pressure is removed, do they cohere? Certainly not. So it is when a tooth is filled by the Herbst method. The advocates of the method state that it is better to finish with the mallet and cohesive gold. It is claimed that time is saved by adopting the method. Any expert operator who uses much gold can pack a whole book into a properly shaped cavity in twenty minutes. Can it be done more rapidly than that by this new method? I think not. It may do for Germany and German dentists, but it will not do here. Why, there are dentists in Germany who do not use an eighth of an ounce of gold in a whole year. The method has not been adopted in the land of its birth, and I am asked to discard an old and tried method for this, which has little or nothing in it to recommend. I say that it will lead to failure, and much harm will result from its adoption, unless much experimenting is done with it out of the mouth. I have the greatest admiration for Herbst and his generosity and ingenuity, but until



better reasons can be given for its adoption than have been advocated, I shall stick to methods upon which reliance is to be placed. Dr. Allport was perfectly correct when he stated that the preservative property of tin is due to the sulphide. My reason for using tin is that it is also a poor conductor, and thermal changes are not so great.

Dr. DORRANCE said that the action of tin on the tooth is a good one, it being a poor conductor of thermal changes, and it also hardens the dentine. He knew this from experience. To get the rubber down on the neck of a tooth use fine iron wire, make a ring by twisting it around the tooth and push it down.

Dr. LAND has made a practice of examining teeth filled with tin, and has found that gold and tin combined crystallize.

Dr. KEELY said that years ago he was convinced of the good qualities of tin by filling and refilling.

Dr. H. A. SMITH had seen fillings of tin crystallized, but has not seen any explanation of the process. Tin has a therapeutic action.

Dr. REHWINKEL stated that Dr. Herbst does not rely on the matrix entirely to make fillings, but to give the contour.

Dr. KEELY believed that Dr. Herbst does not make all the filling by the rotary method. The hand pressure was essential.

Subject passed.

TO BE CONTINUED.

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### CENTRAL ILLINOIS DENTAL SOCIETY.

PEORIA, ILL., OCTOBER 12, 13 AND 14, 1886.

REPORT OF THE COMMITTEE ON DENTAL LITERATURE, DR. J. D. MOODY, CHAIRMAN, MENDOTA, ILL.

(Continued from page 26.)

*Gentlemen:* In offering the motion last year creating a committee on dental literature, it was not in my mind to have presented the largest list of books which could be compiled; but rather to gather from our own reading, and culling from journals and price-lists a notice of such books as would be especially helpful to the dentist, and desirable to have in the office library.

The dentist should have a good general medical library. He should take at least one good medical journal, if for nothing more

than to keep up with the advances continually being made in medical science.

Our specialty is to a certain extent a department of medicine. It should be so considered by the dentist. We should be thoroughly in sympathy with medical progress. For these reasons I include in the following list some books which, while prepared especially for the medical man, will yet be of so much importance to the dental practitioner that they should form a necessary part of his library.

The strictly dental books of the year are few in number. The same can be said of those on aural surgery and of other specialties. From the nature of things it must be so. The dentist will be enabled from this fact to read and digest all those works pertaining especially to his department, and in addition, to know of the progress made in other directions. I make this plea in behalf of a broader culture and as my reason for including these works in our account of the dental literature of the year.

These books are published by more than a dozen firms in this country and abroad. Only such are noticed in the dental journals as happen to be sent to them for review.

Very few of us can have access to all the dental, medical and technical journals, so unless making a special search for them, important books may not come to the notice of some.

I hope that this list of ours may be the beginning of some systematic effort to bring the new issues year by year to the notice of the profession. I wish to call special attention to a few of the books in the appended list.

The "System of Practical Medicine by American Authors," edited by Wm. Pepper, M. D., LL. D., is an attempt to present the whole field of medicine, as practiced in America, in a concise and yet comprehensive form. That it has been well done is best attested by the list of well-known authors writing for the work. It is in five large volumes. It contains just that which the dentist will need to know of general practice, and hence will be invaluable to him.

Sometimes it is well for us to look our own ground over from another's standpoint. That portion on dentition in "Diseases of the Digestive Organs in Infancy and Childhood," by Louis Starr,

M. D., is good and shows a familiarity with the latest thought. It should be in the dental library.

We come in contact with the tongue every day. It is subject to peculiar diseases, often wrongly attributed to the teeth. The dentist should be familiar with its appearance in health and disease. He thus might often sound the note of warning in time. "Diseases of the Tongue," by Henry T. Butlin, F. R. C. S., is one of the latest books on this subject, and worthy a place in the library. "Reference Handbook of the Medical Sciences," edited by Albert H. Buck, M. D., is a work of more than ordinary value, and should be in every dentist's library, and not only be there, but be used constantly for reference. It treats of everything pertaining in any way to the medical sciences. It is more than simply a system of medicine. I can not too strongly urge upon you to possess yourselves of it. Three volumes have been issued. Five more will complete the work. A Dispensatory is likewise invaluable. A new edition, the 3d, of the "National Dispensatory," has appeared during the year.

"Dental Science," by L. C. Ingersoll, A.M., D.D.S., consists of "Questions and Answers on Dental Materia Medica, Dental Physiology, Dental Pathology and Therapeutics."

It is the outgrowth of Dr. Ingersoll's college work. It is very complete for a work of the kind, and abreast with modern ideas. With a very little alteration in arrangement it would make a valuable text-book for college or for the student in a private office. It is a compendium of dental knowledge, valuable for reference to refresh the memory on some point while making a study of it, or in aiding a student in his studies. It is even of more than ordinary value. "A Series of Questions Pertaining to the Curriculum of the Dental Student," by F. J. S. Gorgas, M. D., D.D.S., is another of these useful compends which have appeared during the year. On Bacteriology, a subject of so much importance to the dentist at the present time, the following books are to be especially commended: "Microbes," by Trouessart, the *revised* edition of the 2d edition of Sternberg's "Bacteria," and "Wörterbuch der Bacteria Kunde," by Prof. W. D. Miller, of Berlin. This latter should be given to us in an English dress. We are not aware that this has been done. "American System of Dentistry," to be completed in three large volumes,

the first of which has already been issued, is the latest and in many respects the best strictly dental work we have ever seen. It is a work for study as well as for handy reference. The dentist who does not possess it is behind the times. That portion on pathology, by Dr. Black, should be studied and mastered by every dentist in the land.

"The Dental Follicle," by Legros & Magitot, part two and three is in process of translation by Dr. A. W. Harlan. It will be one of the desirable books and will be looked for with interest. We are glad to say that a system of text books for use by dental students is in course of preparation. These it is hoped will meet a want long felt but hitherto not satisfied. They will be useful to more than the student. As physiologists we should know something of vegetable physiology. A little work on "Plant Dissection," by the editors of the *Botanical Gazette*, is just what is needed by the beginner. It is arranged for laboratory work, and is one of the best books I have used.

The following list is by no means complete. It is just what we have picked up from the sources already named. No special search was made. The importance of the work was not recognized in time. We hope that by another year a very full and complete list may be made.

Dental Medicine—Gorgas, 2d Edition.

Notes on Anesthesia—Underwood, London.

System of Practical Medicine by American Authors—Wm. Pepper, M.D., LL.D., 5 vols.

Diseases of the Digestive Organs in Infancy and Childhood—Starr.

Dental Bibliography—Crowley.

Diseases of the Tongue—Butlin.

Wörterbuch der Bacteria Kunde—Miller.

National Dispensatory—Stille and Maisch, 3d Ed.

Manual for Physiological Laboratory—Harris and Power.

Microbes—Tronessart.

American System of Dentistry—Edited by W. F. Litch, M.D., D.D.S., 3 vols., vol. one issued.

Bacteria—Sternberg, Revised Edition.

Practical Human Anatomy—Weisse.

Reference Handbook of the Medical Sciences—Edited by A. H. Buck, M.D., 8 vols., vols. 1, 2 and 3 issued.

Plant Dissection—Arthur, Barnes and Coulter.

A Series of Questions Pertaining to the Curriculum of the Dental Student—Gorgas.

Dental Science—Ingersoll.



Technology of Bacteria Investigation—Dolley.  
 Practical Therapeutics—Waring.  
 Index to Dental Literature—Taft.  
 Materia Medica—Biddle, 10th Edition.  
 Mechanical Dentistry—Richardson, 4th edition just out.  
 Extra Pharmacopia—Martindale and Wescott, 4th Edition.  
 Methods in Minute Anatomy—Whitman.  
 Bacteria—Klein, 3d Edition (in press).  
 Disinfectants and their Use—Allison.  
 Therapeutics—Ringer, 11th Edition.  
 Epithelioma of the Mouth—H. I. Ostrom.  
 The Dental Follicle—Legros and Magitot, 2d and 3d part (In translation by Dr. Harlan).  
 Local Anæsthesia—J. L. Corning.  
 Principles and Practice of Dentistry—Harris. Edited by Gorgas, 11th Edition.  
 Denti decidue e denti permanenti, La carie dentarie—L. Martini, Turin, 1886.  
 Compendium der Zahnheilkunde—J. Parreidt, Leipzig, 1886.  
 Coca, Cocaine and its Salts—W. Martindale, London.  
 On Cancer of the Mouth, Tongue and Alimentary Tract—F. B. Jessett, London.

TO BE CONTINUED.

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## EDITORIAL.

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### GENERAL ANÆSTHESIA FOR PAINLESS EXCAVATION OF SENSITIVE DENTINE.

To lessen the pain of dental operations is a most humane object of study and effort, but in seeking this end it is feared that some are open to the charge of over zealousness.

There is no intent in this connection to censure the practice of administering general anæsthetics in the operation of tooth extraction, however culpable it may seem.

A patient remarked to the writer recently, while a sensitive cavity was being prepared, "Doctor, won't you please give me chloroform to prevent the pain? My last dentist always did so." Perhaps every practitioner of any considerable experience has been asked similar questions, and that such practices are not uncommon is shown by the fact that at society meetings members have openly confessed that it was of daily occurrence for them to

administer chloroform to enable the ordinary operations on the teeth to be performed painlessly. It is eminently proper therefore that a vigorous protest should here be entered against such a practice, both in the interest of patients whose health, and indeed lives, are jeopardised, and for the reputation of the dental profession, which is needlessly injured. It is a fact well established in surgery that risk and danger always attend the condition of anæsthesia by whatsoever agent it is produced, and to whatever degree the effect of the drug is carried. When it is realized that this state is dependent upon a total temporary suspension of one or more of the essential vital functions, the wonder is that deaths and injuries do not oftener result from its frequent induction.

The dentist who induces general anæsthesia with chloroform for the purpose of rendering operations on the teeth painless, presumably administers the drug until the *primary* effect only is obtained, thereby seeking immunity from danger, which however is not secured, for, as to chloroform, both physiology and experience teach that a state of partial anæsthesia is one of especial danger. J. C. Reeve, M.D., in his article on anæsthetics in vol. I., Reference Handbook of the Medical Sciences, writes: "It has been abundantly shown, however, that in animals under chloroform the blood pressure and the action of the heart are liable to great and sudden irregularities, and that frequently the latter stops without warning, events which never occur under ether. So marked is this that the term 'capricious' has been applied to the action of chloroform by a recent scientific commission. Clinical experience has shown the same irregularity of action. Sudden death has occurred repeatedly, no explanation being possible, in the hands of skilled administrators, with every precaution taken, with apparatus insuring a definite proportion of the vapor, and without apparatus, at the very beginning of the procedure, and with but the smallest dose, to subjects in perfect health; and to those who had repeatedly taken it before, the accident has happened. The closest scrutiny of these cases, the fullest admission of every extenuating circumstance, will not suffice to set aside the verdict that chloroform acts irregularly, and sometimes with energy and effect out of proportion to the dose."

To further prove the danger of chloroform as it is administered

for operations upon the teeth, the following is quoted from the article on "Anæsthetics and Anæsthesia," by Dr. H. M. Lyman, in the International Encyclopædia of Surgery :

"The primary stage of anæsthesia is a period of excitement during which it is not impossible that fatal syncope may result from over stimulation of the cardiac inhibitory apparatus before the fully toxic action of the drug has been displayed. Convulsions may thus be aroused, and may produce death by arrest of respiration, or they may be the forerunners of fatal syncope. Sudden excitement of the reflex apparatus, by incision of the skin before complete abolition of sensibility, may in like manner become a cause of death. It is for this reason always best to produce complete insensibility before the commencement of an operation, even though a certain slight risk of over saturation of the tissues be thus incurred." Also, in support of this position, T. Lauder Brunton, than whom there is no higher authority, in his work on Pharmacology, Therapeutics and Materia Medica, says: "The reason why imperfect anæsthesia is so dangerous is that chloroform does not paralyze all the reflexes at the same time. A very large proportion of the deaths from chloroform occur during the extraction of teeth, and we may take this operation as a typical one in regard to the mode of action, both of the sensory irritation and of the chloroform. When a tooth is extracted in a waking person the irritation of the sensory nerve produced by the operation has two effects.

"1st, It may, acting reflexly through the vagus, cause stoppage of the heart, and a consequent tendency to syncope.

"2nd, It causes reflex contraction of the arterioles, which tends to raise the blood pressure and counteract any tendency to syncope which the action of the vagus might have produced. In complete anæsthesia all these reflexes are paralyzed, and thus irritation of the sensory nerves by the extraction of the teeth has no effect either upon the vagus or upon the arterioles. In imperfect anæsthesia, however, the reflex center for the arterioles may be paralyzed, while the vagus center is still unaffected. The irritation caused by the extraction of the tooth may then cause stoppage of the heart, and there being nothing to counteract the tendency to faint, syncope occurs, and may prove fatal."\*

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\*See also Bartholow's *Materia Medica and Therapeutics*, article "Chloroform."

In the U. S. Dispensatory, 15th edition, we read that "even with the greatest care there is always danger in the anæsthetic use of this agent. It is estimated that death occurs once in 3000 inhalations on an average."

From statistics gathered by Kappeler we learn that out of 100 recorded cases of death from chloroform 43 occurred before complete anæsthesia, and 47 during it. Out of twenty cases where the quantity of chloroform given was accurately known, five deaths occurred in from one to three minutes, and in ten others in from six to fifteen minutes.

Newspaper reports of deaths in the dentists' chair frequently admonish us, that dentists, as a rule, are incompetent to properly administer chloroform. They seldom have at hand the means for resuscitation, such as the galvanic battery, nitrite of amyl, and other stimulants, and rarely possess the knowledge of pathological conditions necessary to intelligently discriminate as to suitable subjects for general anæsthesia.

The induction of chloroform narcosis is contraindicated in conditions of chronic alcoholism, organic disease of the heart, epilepsy, psychical depression, predisposition to syncope, bodily weakness. In addition to the above, at least two especial dangers are threatened in its administration for dental operations; the first one being the sitting posture, which is ordinarily that occupied during the preparation of a carious cavity, and which subjects the patient to a peril well defined by all the known laws of anæsthetization; for both theoretically and clinically considered it is imperatively required that the subject should be in a horizontal position. The second especial danger depends on the well-known fact that any operation which involves irritation to the sensory terminations of the 5th pair of nerves, excites the inhibitory action of the pneumogastric nerves (through its sympathetic connections), which causes slowing of the heart's action and may terminate in a fatal syncope. This fact explains the reason for the great number of deaths from chloroform when it is administered for tooth extraction.

In the light of these facts which are doubtless already well known to the educated members of the profession, and heeded by the more conscientious, it is plain that chloroform anæsthesia must not be produced for trivial dental operations. Dental operations,



apart from the purely surgical, are rarely of sufficient gravity to warrant incurring so great a risk. The question of moral right and legal responsibility might well be considered at this point did space permit.

While, therefore, we feel it a duty to the profession and the public to condemn a prevalent and, if reports are true, a growing evil, we are glad of an opportunity to commend and encourage those who seek the means of abrogating the pain of dental operations in the only direction that is left us with the present knowledge of general anæsthetics, viz., topical applications for the production of local anæsthesia.

Much labor and study have been bestowed upon the problem of painless dentistry, but we are compelled to say that thus far the practical results are meagre. Though there have been some improvements in method and appliances to further this end, and many drugs and combinations of drugs have been brought forward with great pretensions, the long sought agent which shall eliminate the terror of dentistry still eludes our grasp. Let us have more earnest, scientific workers in this field, and the object sought will be nearer attainment—the abolition of pain from operations performed on living teeth.

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### MISUSE OF MATRICES.

There seems to be a prevailing inclination on the part of the dental profession at large to resort to the use of matrices, as an important adjunct in the filling of teeth; the significance of such a desire is based upon the theory that we not only save much time, trouble, and annoyance to ourselves and patients, but we are able to perform a more perfect operation, with the assistance of these devices, than could well be done in their absence.

It is foreign to our purpose to discourage any one in the use of such appliances, for they are unquestionably very useful in many instances; however, we deem it an unprejudiced duty to point out some of the evils which may, and do accrue from their use. In the first place it will, in time, surely pave the road to carelessness which will be almost irremediable in so far as the proper adaptation of gold to the margins of a cavity is concerned; this does not imply that all operators would become engulfed in

a sea of careless habits, for the judicious and pains-taking operator, at once recognizes the importance of carefulness in every detail of an operation, regardless of what the auxiliary appliance may be in connection with the case.

The proper adjustment of a matrix to a tooth is a consideration which we fear but few recognize as being important; unless great caution is observed, the undue forcing of a matrix between crowded teeth will almost always result in a fractured cervical margin, even if the matrix is reduced to a minimum in thickness; the fracture thus induced may be so slight as to escape the attention of the operator at the time, and still be of magnitude sufficient to entirely destroy the integrity of both the enamel and dentine at the point of contact with the filling.

We may refer—and justly too—to the continuous pain oftentimes inflicted upon the patient during protracted operations, and which can not well be obviated if such an instrument is used; we are not justified in ignoring the comfort of our patients under such trying circumstances.

There are a great many different varieties of matrices to be found in the market; some are simple in construction, while others are more complex in their nature; and not one out of this goodly number can be made universally applicable; therefore it remains for us to say that the ideal matrix still lingers within the hidden recesses of man's inventive genius.

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#### OHIO STATE DENTAL SOCIETY.

The second annual meeting of the above society convened in Toledo the last Tuesday in October, and was in session for three days. About one hundred members and visitors were in attendance. The second day's sessions were consumed by clinics and discussions on the Herbst method, and the use of matrices. One very noticable feature of the methods of this society is, that the board of directors do all the business, so that no time is wasted in aimless discussion. We hope to see other societies follow this good example. In some other respects, however, the society is behind the times; notably, in the preparation of a programme of scientific work. We believe in the system of having a subject and a particular essayist to read a paper on that subject; after the

reading of such a paper or essay, an intelligent discussion is pretty certain to follow. According to the method now pursued by this society, some one is called upon to open the discussion on a subject, and if he fails to open it properly or succinctly, a very rambling discussion takes place, which may or may not be valuable. In spite of this defect in the government of the society, the meeting was a success, as many new members were enrolled, and at times the debates were spirited and of considerable value. The following officers were elected: Dr. H. H. Harrison, President; Dr. C. M. Wright, 1st Vice-President; Dr. Jere E. Robinson, 2d Vice-President; Dr. J. R. Callahan, Secretary; Dr. George W. Keely, Treasurer.

#### BOARD OF DIRECTORS.

Drs. E. G. Betty, F. C. Runyon, Charles Welch, and W. H. Hayne.

Drs. J. Taft and F. H. Rehwinkel were re-elected members of the Ohio State Board of Dental Examiners.

Springfield, O., was selected as the next place of meeting the last Tuesday in October, 1887.

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#### ROOT FILLINGS.

The subject of root filling has been discussed so often of late that it would seem impossible to say anything new or valuable concerning the methods or materials for performing the operation, at the present time. Still, we believe there is room for improvement, even in this every-day procedure. It has been our privilege, during the past few weeks, to remove cotton from roots of teeth, over which fillings of gold or amalgam had been inserted. In every case an alveolar abscess had already been formed, or there was at the time an acute pericementitis, which would have resulted in an abscess. In a few of the cases seen, the cotton had been packed into the roots within a year or two. In all cases it had been soaked in creosote, carbolic acid, or a solution of chloride of zinc; and the odor, or other antiseptic property of the medicament, had in every instance disappeared. We presume the idea of the dentist in using cotton as a root filling is, primarily, ease of insertion; and he also entertains the hope that, by medicating it, that that will prevent the development of mephitic

gases. Such a hope is not founded on a correct knowledge of the lasting property of an antiseptic. The porosity of the interior of a tooth alone is such that the antiseptic, whatever may be its potency, will in time be absorbed. If it be a chemical antiseptic and disinfectant, new compounds are formed which will render it inert. In addition to these facts, every one will concede the impossibility of packing or condensing cotton, either dry or freshly medicated, into the apices of roots so that liquids or gases will not gain entrance into them, and in time permeate the cotton and render it necessary to remove these makeshifts of root-fillings. Cotton is a substance unfit for a permanent root-filling. While it is not our purpose to advise any particular material for the performance of this delicate operation, yet we enter our protest against the use of cotton in any form as an ingredient, even, in the filling of roots. The practice of incorporating fibers of cotton into plastic materials for filling roots is delusive and unreliable. Perfect homogeneity of the filling is never obtained, especially in thin or tortuous canals. Many plastic substances after a time deteriorate and the cotton fibers become the reservoir of putrefactive gases, which, after complete saturation, must have exit. By preference this is obtained through the apical foramen, as here is found the least resistant exit. We trust the foregoing remarks are sufficiently conclusive to deter any young or inexperienced practitioner from using cotton as a permanent filling in the roots of teeth.

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## DOMESTIC CORRESPONDENCE.

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### LETTER FROM BOSTON—PISTOL-SHOT WOUND OF THE ANTRUM OF HIGHMORE.

*To the Editor of The Dental Review:*

The necessity for a thorough understanding of anatomy—of the face at least—by practical dentists, was strikingly illustrated by a case brought to my notice a few days ago.

Mr. L., aged 40, of good general health, was accidentally injured by a pistol-ball, which entered the right side of the face,



at a point slightly anterior to the canine fossa, and passing through the canine fossa of the maxillary bone, was lodged in the posterior wall of the antrum. Immediately after the accident he consulted a dentist, to whose care, he thought, such a case properly belonged. Without an attempt to probe the wound or any effort to ascertain the probable course, and the possible location of the missile, the dentist, upon the complaint of the patient that there was a feeling of pressure immediately above the first bicuspid, stated it to be his opinion that "the bullet was right on top of the end of that tooth, and that if the tooth was extracted, even if the ball did not immediately drop out, it would naturally work itself down, and through the opening by reason of its own weight." The patient, not knowing better, and of course believing in the present advanced position of dentistry, consented, and the tooth was removed, but no "ball" dropped out. Without any further treatment he was dismissed, and told that "if the bullet did not work out, to come back in a week."

The patient called my attention to the case five days later. An examination revealed that a twenty-two calibre pistol-ball entered the superior maxillary bone, immediately posterior to the canine eminence, passing clear of the root of the canine, as well as the bicuspid, entered the maxillary sinus (in this instance a very large one), and became imbedded in the posterior wall of the cavity immediately above the third molar. A very superficial examination brought these facts to light, and the lead having been instantly removed through the opening already existing, under the usual antiseptic treatment complete healing of the parts took place with great rapidity.

The error of extracting the first bicuspid is an unpardonable one, in fact, unless the roots of the teeth themselves are supposed to be involved, the extraction of a tooth for the purpose of gaining access to the antrum, is seldom required, and if extraction has to be resorted to any of the three teeth posterior to the first bicuspid would afford a much better entrance to the antrum. If the loss of the first molar was to be deplored, the second bicuspid would be more proper for removal than the first (both being in an equally healthy condition).

This case, as stated at the beginning of this letter, strikingly illustrates what the lack of a sufficient education in the elemental

branches—if anatomy may be so called—of the average dentist, may lead to. Frequent readings and posting up relative to the parts about the mouth, face, etc., should be indulged in by all dentists, especially those who have no college education, or in instances where the college course is not sufficiently practical or thorough.

A sample copy of the November issue of the *Review* was received, and highly appreciated. Henceforth it shall be a regular visitor in the library of

Yours very truly,

B. N.

BOSTON, MASS., Dec. 3rd, 1886.

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## FOREIGN CORRESPONDENCE.

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### THE PRESENT CONDITION OF DENTISTRY IN HUNGARY.

*To the Editor of The Dental Review :*

SIR—The condition of dentistry in Hungary has not hitherto presented a very favorable aspect. Recently, however, it is rumored, that the Minister of Education is about to take the necessary steps to elevate the profession to its proper rank among the learned sciences. In view of the fact, however, that those in position to make the necessary changes are lacking in the essential interest, it is doubtful whether the steps about to be taken will meet the present requirements.

The present trifling condition does not even have the slightest semblance of ever approaching anything like perfection, and this *quasi-atrophic* condition is the result of the steady uninterrupted progress made by other branches of medical science; but dentistry, in this country, lacking the proper means, has for some time retained this stagnated condition.

About fourteen years ago any person could enter the practice of dentistry with very much less qualification than was demanded of the general medical practitioner, hence its ranks received recruits from among the skillful craftsmen and the more intelligent mechanics, who were attracted to it by its less pretentious ap-

pearance, and thus the ranks were rapidly filled by representative mechanics, who supplied the demand.

After a three-or-four-years "surgical" course, with but few subjects to study and to pass upon in examination, any one could become a dental practitioner, without the eight years of preliminary general education (gymnasium) required of the general medical practitioner. Many also procured a separate dental diploma (the possession of which was not obligatory), and which could be procured without difficulty even by the least worthy of those who had passed the "surgical" examination.

These inferior requirements of a preliminary education had the effect, however, observed from a dental point of view, of supplying the numerical wants at least, for *quasi*-physicians soon abounded everywhere.

About fourteen years ago the so-called "surgical" courses and examinations (hence the possibility of an increase in the number of *quasi*-physicians) were abolished by the Minister of Education. The result is, that at present, aside from those above referred to, who are permitted to continue in practice during the course of their lives—only those graduated by the medical faculties of the universities,—the *doctores universæ medecine*, are permitted legally to practice any of the specialties of medicine; as a result of this state of things, the decrease of those who became legally qualified dentists more than fourteen years ago, the present long course of medical study, followed by a severe examination—the number of legally qualified dentists continually diminishes, especially so, since the successful medical students do not readily enter the less promising field of dentistry; less promising in this country at any rate. Added to this the fact, that those who entered the field of dentistry not only were required to continue in the advance of medicine, but also to add the special studies necessary for the successful practice of dentistry, there naturally existed considerable of a gap between the legal dental practitioner and the multitudes of people in demand of their services. A large number of persons have endeavored, and are now endeavoring, to fill this gap by illegally engaging in the practice of dentistry, a purpose which is being combated by legal measures by those who are "licensed" practitioners.

This condition of dental war, which at present rages in our

midst, is what led me, at the beginning of this paper, to refer to the standing of dentistry as "trifling," a term which is perhaps harsh and severe, but, nevertheless, true, and which I believe to be able to maintain, in this (not only so far as I refer to *illegal* practitioners, but also as to the meagre facilities for the perfection of practitioners, of whom very many of the *legally* qualified are sadly in need. I refer to those especially who have not had the advantages of apprenticeship in the office of private practitioners, or who have not enjoyed the opportunities of visiting foreign dental schools, of course this applies still more forcibly to those who practice illegally.\*

The opportunities for perfecting one's self in dentistry in Hungary are very meagre indeed. They have been so for fourteen years, although, perhaps, not to a greater extent. Before that time dentistry was taught by an extraordinary teacher, with whom occasionally some private tutor divided that honor. But even then the subjects embraced in the course were not divided between the two, but both were teaching the same subjects under the term of "general dentistry." The special dental examination was optional, and only such obtained the diploma conferred who chose so to do; the possession of the document was virtually without an object, either as a certificate of legality or qualification; as the former was already conferred by the "surgical" examination, and by the latter the fact of qualification was not established by reason of the excessively lenient examination to which the candidate so readily submitted.

At present, however, the passing of a dental examination, which is still more lenient than formerly, is *not* legally prescribed. That is, one is not *obliged* to submit himself to it, and it is, therefore, only passed by those who voluntarily wish to submit. In a few instances, however, it occurred, that certain aspirants were permitted to pass examinations *outside* of the legal prescription, and those examinations were conducted by medical specialists, not dental practitioners. From a dental standpoint it may be interesting to know how severe the questions, and

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\*The terms "legal" and "illegal," as used by the writer, do not exactly imply what we understand by those terms in the English language. In Hungary, a *legal* practitioner is one who has received a medical education, can use the title "Doctor," "Dentist," etc., and an *illegal* practitioner is one who, having passed no examination, is simply a "dental mechanic," "technicker," "workman," etc.



how sapient the answers must have been, in so far as they related to dentistry proper! The present candidates receiving the degree of *doctores universæ medecine*, which entitles them to practice all branches of medicine, including dentistry, are never questioned as to their knowledge of dental principles and practice.

Looking at the condition of dentistry in Hungary from the standpoint of a dentist, the conditions are very antiquated, the only change being that upon the death of the former aged "extraordinary university dental teacher," who received partial support from the government, the position also died. Hereupon, unintentionally yet simultaneously, two private tutors (*docents*), of whom I chanced to be one, were appointed. To them is delegated entirely the teaching of dental science in all its branches, and this was done, as before, by the use of the same *curriculum*, and entirely independent of each other. Seeing the useless and faulty arrangement of this plan, I have reduced my lectures and teaching to so limited a time that retrogression has set in, and I myself am upon the verge of publicly withdrawing.

Virtually, then, it may be said that the entire teaching of dentistry for the whole of Hungary is being conducted by one person, and he a private tutor of the University of Budapest. It is natural then, that this single tutor (who himself is sorely pressed for want of time, by reason of his personal self-interests), and who has established at his own expense a so-called "dental hospital,"—for which, however, to some extent, he has been recently remunerated by the government,—should be eagerly sought, and in the limited time at his command, be virtually thronged by the thirsty aspirants for knowledge, as nowhere else in the entire domain of Hungary can they listen to the teachings of dentistry.

The proportion of demand and supply is expressed by the Hungarian maxim, "one wild apple for six bears," substituting, however, sixty lions for the six bears, and these lions, having received the one wild apple, minus all other nourishment, are certainly lacking a fit condition to assimilate it.

The listeners at these meagre doses of dental instruction are almost exclusively candidates for medical degrees, and these after obtaining their degrees, as previously stated, with a few exceptions, do not readily enter the field of dentistry exclusively; but

even though they have spent six months in the study of dentistry, they follow a general practice and resort to it only as a side issue, or practice it in connection with one or more specialties, and even this is the case only in rare instances, the majority preferring to remain the "lions," as general medical practice in Hungary is far more honorable and dignified than dentistry. If some of them do descend and become the "bears," they are not even *quasi*-dentists, but hardly fourth-rate, unless they devote themselves entirely to dentistry and acquire the additional necessary education by one of the means above referred to.

According to the conditions just described, it is absolutely necessary for any one wishing to perfect himself in dental science, to visit foreign countries, to go at least to Berlin, but advantageously even farther. Or to become apprenticed for several years to some first-class private practitioner, which in this country is done with difficulty and accessible to but a few. In other countries the establishment of dental schools has been found essential, the need for them exists in Hungary as well, and the demand ought to be supplied, but by thorough and well, equipped schools, so that those who desire to *perfect* themselves may do so at home. Whether the plans now under advisement by the Minister of Education, when carried into execution, will fully meet these wants, remains to be seen, and at the proper time the subject will again receive due attention in the pages of the DENTAL REVIEW.

In conclusion, bearing upon the statements made in this letter and in support of their correctness, the following statistical table is added. The population in cities is given in round numbers, in order that the proportion of "licensed dental doctors" and of "dental mechanics not licensed to practice dentistry proper" to the population, be more readily observed.

In the possessions embraced under the royal crown of Hungary, there are in round numbers sixteen millions of people; according to the subjoined table there are in the cities of Hungary in active practice 57 licensed dentists (dental doctors), and 64 unlicensed dental mechanics. Of course, mention is made only of such who devote themselves *exclusively* to the practice of dentistry or of some branch thereof. Those who only practice it as a side issue in connection with some other business or medical practice, not being regular dentists, are intentionally ignored.

Names of Hungarian cities where Dentistry is practiced.	Population in round numbers.	Licensed Dentists. (Dental Doctors.)	Dental Me- chanics not licensed to practice Dentistry proper.
Arad.....	35,000	2	1
Baja.....	18,000	—	1
Békés-Csaba.....	32,000	—	1
Beszterce (Bistritz).....	8,000	—	1
Brasso (Kronstadt).....	28,000	2	1
BUDAPEST.....	400,000	20	20
Csongrád.....	17,000	—	1
Debreczin.....	51,000	1	1
Eger (Erlau).....	19,000	—	1
Eperjes.....	11,000	2	—
Eszék.....	17,000	—	1
Esztergom (Gran).....	8,000	—	1
Fiume.....	18,000	1	—
Győr (Raab).....	20,000	1	2
Gyula - Fehérvár (Karlsburg).....	8,000	—	1
Holdmező - Vásárhely.....	50,000	—	1
Jász-Berény.....	20,000	—	1
Kassa (Kaschau).....	22,000	4	—
Kaposvár.....	7,000	1	—
Kalocsa.....	15,000	—	1
Kecskemét.....	45,000	—	1
Kolozsvár (Klausenburg).....	27,000	1	2
Komárom (Komorn).....	12,000	1	1
Köszegh (Güns).....	7,000	—	1
Lőse (Leutschau).....	7,000	—	1
Mármaros - Sziget.....	9,000	—	1
Maros - Vásárhely.....	13,000	1	—
Miskolcz.....	21,000	—	1
Nagy-Bánya.....	9,000	—	1
Nagy-Kanizsa.....	11,000	—	1
Nagy-Károly.....	13,000	1	—
Nagy-Szeben (Hermannstadt).....	19,000	2	—
Nagy-Várad.....	31,000	1	1
Nyíregyháza.....	22,000	1	—
Ovár (Altenburg).....	14,000	—	1
Pécs (Fünfkirchen).....	24,000	1	1
Poprád.....	2,000	—	1
Pozsony (Pressburg).....	48,000	1	2
Rima-Szombat.....	5,000	—	1
Segesvár (Schäzburg).....	8,000	—	1
Sopron (Odenburg).....	21,000	1	—
Selmeczbánya (Schemnitz).....	14,000	—	1
Szabadka (Marie - Theresiopel).....	61,000	1	—
Szatmár.....	18,000	—	1
Szeged.....	73,000	2	—
Székes-Fehérvár (Stuhlweissenburg).....	23,000	—	1
Szerencs.....	2,000	—	1
Szepes-Váralja (Kirchdorf).....	3,000	1	—
Szolnok.....	16,000	—	1
Temesvár.....	34,000	2	—
Új-Hely.....	10,000	1	—
Új-Szőny.....	2,000	1	—
Új-Vidék (Neusatz).....	19,000	2	1
Veszprém.....	12,000	—	1
Zágráb (Agram).....	20,000	2	1
Zimony (Semlin).....	9,000	—	1
Zombor.....	24,000	—	1
Total.....		57	64

Yours very truly.

BUDAPEST, November 5th, 1886.

JOSEPH ISZLAI, M. D.

## REVIEWS AND ABSTRACTS.

A PRACTICAL TREATISE ON MECHANICAL DENTISTRY, by Joseph Richardson, M.D., D.D.S. Fourth edition. Revised and enlarged, with four hundred and fifty-eight illustrations. Philadelphia: P. Blakiston, Son & Co. One volume, octavo; cloth, \$4.50; leather, \$5.50.

Since the first edition was issued, now twenty-six years ago, Richardson's Mechanical Dentistry has been the standard text-book both for the student and practitioner. The fourth edition, which has just come to hand for review, is yet more deserving of commendation, and fully maintains the reputation in which the work has been held. It presents a faithful picture of modern prosthetic dentistry, the newest as well as the orthodox time proved methods and appliances being plainly described in excellent text and in well-executed illustrations.

The author has recast the original text, entirely eliminating obsolete methods, making amendments and additions throughout the whole work, which consists of 703 pages, — 265 more than the preceding edition. The added matter relates chiefly to root-crowning, bridge-work "permanent" and "removable;" partial dentures; the principles and æsthetic requirements of entire dentures, etc.; continuous gum and celluloid bases: and an introduction which is an admirable essay in itself.

The author indicated his appreciation of the fact that there is a growing sentiment in favor of bridge-work by devoting seventy-two pages to the subject; he also doubtless ministers to a popular want in giving even more space to the chapter on root-crowning. The subject of bridge-work is treated in a fair and unprejudiced manner, the methods employed by different practitioners being described in detail, in some instances in the very words of the inventors.

Many, however, will regret that so authoritative a work as Richardson's should be marred by indorsing and giving countenance to a patented system of bridging (even though it were faultless, which indeed, it is not) that is advertised to the public



by a flagrant abuse of correct professional methods, and in gross violation of the code of ethics. More than this, however, would be excusable in a book which is so valuable an addition to dental literature, and without which no progressive dentist is well equipped.

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#### THE STATUS OF DENTISTS IN ENGLAND.

The following comment on the late meeting of the British Dental Association taken from the *Medical Record* is worthy a greater publicity among dentists.

"The recent meeting of the British Dental Association has drawn the attention of members of the medical profession to their dental cousins. Dentistry and medicine are much nearer together now than they were before the passing of the Dental Act. That Act of Parliament, although (by the clause recognizing as dentists all those in actual practice as such at the time the act passed) it admitted an army of irregulars to the dental register, yet did good for the future by providing that henceforth no dentist should be allowed to practice until he had not only been through a proper course of study (including apprenticeship to a dental practitioner and attendance at a dental hospital), but passed satisfactory examinations. Dentistry as a profession may be said to be "looking up" in Great Britain. The status of its practitioners is decidedly better than formerly, and by a dentist the public now understand some one who knows something besides how to "draw teeth." Among the dental practitioners in the metropolis are several highly qualified medical men, who, originally designed for the medical profession, afterward forsook it to restrict themselves to dental work solely. More than one university graduate in medicine has done this, and among the odontologists are several Fellows of the College of Surgeons. It is by no means uncommon now for a dental student to prolong his curriculum somewhat and obtain a surgical, as well as a dental, diploma. (None of our universities give a degree in dentistry like the D.D.S. of the States.) At the recent Dental Congress it was strongly urged in one of the papers read that not merely a few, but all dental students should be encouraged to go through a full course of medical study, and become qualified in medicine and surgery."

## DENTAL EDUCATION IN BRAZIL.

The Brazilian empire at present has two medical faculties ("faculdades de medicina"), one of which is located at Rio de Janeiro, and the other at Bahia. The faculties are not private institutions, but are under government patronage and surveillance. At both of these universities instruction in dentistry is given, which differs but little from the medical course. In these institutions, as well as in those of Germany, the chairs of professors are occupied by such who have studied in Europe, whose ambition, almost fulfilled, is, to elevate the Brazilian universities to the same high standard which those in Europe enjoy.

Students of dentistry are required to attend a three-years' course, in which the studies are divided as follows: 1st year, Physics, Chemistry and General Anatomy; 2d year, Histology, Physiology, Pathology and Hygiene; 3d year, Therapeutics, special surgery of the head, and dentistry, in all its scientific and practical branches.

After passing the examinations successfully the candidate receives the title of *Cirurgiao-dentista*, or surgeon-dentist, similarly to the titles conferred in other countries except in the United States.

As far as foreign dentists are concerned it is exceedingly difficult for them to locate in Brazil unless they are familiar with the language of the country, as all must submit to an examination in that language.

Such who possess foreign diplomas, whether they are Brazilian subjects or not, are obliged, first, to have them approved by the Brazilian consul or minister in the country in which they studied, and the various consuls of Brazil are instructed to approve none but the diplomas of recognized and reliable universities; second, the diploma must be approved by the respective consul in Brazil, the Minister Plenipotentiary or *chargé d'affaires*, and finally by the Minister of Foreign Affairs of the Brazilian Empire. After having thus been approved the holder of the document is entitled to an examination without attending either of the Brazilian universities. This examination extends over a period of from three to four weeks, and comprises the subjects of Anatomy, Physiology, Histology, Physics, Chemistry, Hygiene, Pathology, Thera-

peutics, special surgery of the head and dental science in its theoretical and practical phases, or in other words the same examination which is required of a three-years' course student of the universities of Brazil.

Accordingly, Brazil in this respect is in the front ranks. The law against violators is administered with severity, the offender practicing without authority is fined for the first offense \$75; for the second, \$200; and the third offense is punished by from three to six months imprisonment.—*Corres. f. Zahn.* (Translation.)

MANUEL DE THERAPEUTIQUE DENTAIRE SPECIALE, et de matière medicale, appliquée a l'art dentaire suivi d'un formulaire a l'usage des praticiens. Par Ch.-L. Quincerot Chirurgien dentiste. Paris: A. Delahaye et E. Lecrosnier, Editeurs, 1886. Pp. viii-72.

This little brochure will prove very acceptable to French readers who wish to refer to recent additions to special materia medica and therapeutics. It contains brief notices of forty or fifty remedial agents, a formulary chiefly relating to dentrifices, and a table of antiseptics after M. Miguel. The author shows commendable zeal in bringing his work up to date, and we congratulate him on the neat appearance of the work and its freedom from errors, both of proof-reading and syntax.

#### PAMPHLETS RECEIVED.

Annual Report of the Commissioner of Pensions for the year ending June 30, 1886.

Esthetics of Medicine. By H. A. Cottell, M. D. Reprint from the *American Practitioner and News*.

Transactions of the Michigan Dental Association, thirty-first annual session, held in Ann Arbor, March 16-19, 1886. Published by order of the Association.

Transactions of the Illinois State Dental Society, twenty-second annual meeting, held at Rock Island, May 11-14, 1886. Published by H. D. Justi, Chicago.

Proceedings of the American Association for the Advancement of Science. Thirty-fourth meeting, held at Ann Arbor, Mich., August, 1885. Published by Frederick W. Putnam, Salem, Mass.

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## TO THE EDITOR OF THE DENTAL REVIEW :

I would like to ask some of the readers of the REVIEW to give me some information about the treatment of pyorrhea alveolaris. I have very much trouble with the case of a patient, 55 years of age, and of feeble health; the lower six anterior teeth are affected seriously, and, although I have treated the case according to modern practice, no improvement results; all other teeth are in the mouth and in good condition. Would any one advise the extraction of the teeth at that age, and recommend artificial substitutes?

B. D., Iowa.

## TO THE EDITOR OF THE DENTAL REVIEW :

Among the *Queries* of the November number of the REVIEW, I notice one in regard to the treatment of blind abscess. For a study of the subject the writer is referred to Vol. I of the American System of Dentistry (just published), p. 929 to 953.

In opening into a pulp-chamber, which is supposed to contain the partially or totally decomposed remnants of a dental pulp, and having a blind abscess, exceeding care is necessary to prevent the unfavorable sequence, which the writer terms "a swelled face." Indeed, such a state as a strictly blind abscess does not and can not exist; every abscess discharges, and the discharge finds exit to the exterior; but in some cases the secretions are discharged by one large opening, which is the fistula. In blind abscesses the discharge takes place either along the root, or by small minute openings through the tissues; but a blind abscess being simply a common alveolar abscess, only partially active, has but a very slight discharge. Hence the tissues in the vicinity of such a tooth may be apparently in good health, yet through them minute quantities of decomposed fluids may be continually oozing.

Now, if by any means in opening into a canal, a stoppage occurs, or rather, if by any means an undue atmospheric pressure is produced, a sudden activity is aroused, there being no concentrated opening whereby the results of decomposition may be discharged; the gases (generally sulphuretted hydrogen) permeate the tissues and the "swelled face is the result."

In opening into such a tooth, invariably use small instruments; never allow the bur or drill to enter in such a way as to be liable to force anything in advance of it. Use no reamers or any other appliances for enlarging canals; use fine broaches oiled or dipped in ether. Do not use anything which is liable to cause pressure towards the apical foramen until after the pulp-chamber and the canals have been thoroughly washed with ether, and saturated with eucalyptol or some other antiseptic, which does not coagulate the contents of the canal. By observing these points a "swelled face" can invariably be prevented.

L. D., D.D.S.

## TO THE EDITOR OF THE DENTAL REVIEW :

To question of "Dentist, Santa Barbara, Cal.," I should reply as follows:

Considering the age, condition of the mouth, etc., the molars of which he speaks ought to be retained, at any rate, until after the second molar has erupted



and become firmly established in its position. The premature extraction of the first molar, occasions a tilting of the adjacent teeth which is so detrimental to the regularity of the arch, proper occlusion, and the retention of a proper facial symmetry. If the teeth are very badly decayed, instead of filling, take an impression and fit a gold cap, making a half crown, attach with oxyphosphate and burnish the cap snugly to the tooth, and so preserved, they will prove serviceable.

Respectfully,  
SUBSCRIBER.

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TO THE EDITOR OF THE DENTAL REVIEW :

I have received a specimen copy of the *REVIEW* and like its appearance very well. I see among the ? ? ?, one by "Perkins." My advice is to send that patient to some other dentist.

C. L., New York.

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TO THE EDITOR OF THE DENTAL REVIEW :

In reply to question of "Perkins" in November number, I would advise him to read the article in *DENTAL REVIEW*, Vol. 1, No. 1, page 38, on "Implantation," and also address Dr. William J. Younger at San Francisco, for a copy of his pamphlet on the same subject; select the proper tooth, make his socket, and implant a tooth in it.

K. N. B., Chicago.

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TO THE EDITOR OF THE DENTAL REVIEW :

I have three patients of one family, "A mother and two daughters," who are troubled with a black deposit on all the teeth, very much like nicotin deposit, which is very hard to remove. The epidermis on either side of the median line of the chin is also discolored slightly. Several years ago they were in the habit of taking a great deal of iron, but of late years have not taken any. Will some one kindly tell me what causes the deposit on the teeth and how to prevent the same?

BUFF.

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"THE EFFECTS OF SWALLOWING A TOOTH."—I am no physician or dentist, but a minister. I was called lately to visit a sick woman in my parish. She was suffering from some lung difficulty. She was confined to her bed, expectorated a good deal of blood, stained and colored mucus; breathed short and rapid. She told me she had been, about three weeks ago, to a dentist twenty-six miles distant from here, to have her teeth extracted. He administered a good deal of ether. She had taken it a number of times before, in child-bearing. So a little did not seem to have the desired effect. When she got home she felt cold and sick. Two or three days after she had a chill. The day after began coughing. In a few days had to take to her bed. Coughing became violent, and there was expectoration of colored matter. The thirteenth day after she was taken sick she coughed up a tooth; she showed it me; it was one of the canine teeth, sound, and did not appear to be discolored from any cause. She said the doctor attending her said the tooth for thirteen days had been in her lung, and was the cause of her lung difficulty. Two other such cases are reported in this locality. One a young man who fell sick and became consumptive from swallowing a tooth during the process of extraction, which he coughed up twelve months after, and got better after he coughed up the tooth.

Now, I am not learned enough in physiology to determine the question for myself whether it is possible for a swallowed tooth to lodge in the lungs and cause consumption. Is the popular opinion that it may do so, a "Non sequitur" or an actual fact? A little light would oblige.

J. W.

MEMORANDA.

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Dr. L. Eaton has returned from California.

Dr. E. R. E. Carpenter will spend the winter in Oregon and California.

The *Dental Practitioner* has suspended publication, after an existence of four years.

Dr. J. E. Hinkins was married last month to Miss Willoughby, of Hyde Park, Ill. We wish them every happiness in the honorable state of matrimony.

The longevity of dentists, in Germany (embracing 123 deaths and covering a period of 9 years), is 59 years, 9 months and 28 days. In the United States the longevity is reckoned at a much lower figure, being said to be about 40 years.

Dr. Chas. H. Thayer was married December 2d to Miss Grover. They will reside in Evanston, Chicago's Cambridge. We wish them much bliss, and hope they will succeed in extracting the acme of happiness in the state of matrimony.

We are collecting data as to the success of the Herbst method in America, its worthy exponent having crossed the Atlantic to demonstrate his method personally; it deserves a fair trial at our hands, and such as have given it such trial and have reached a conclusion, are especially invited to express their opinion in the pages of the REVIEW.

Dr. B. H. Catching, editor of the *Southern Dental Journal*, contemplates issuing an annual, which shall be a collection of the *practical* ideas, methods and points gathered during the year from American dental periodicals. Such a book would be useful and handy, if its contents are rendered easily available by proper classification and indexing.

Dr. Jas. S. Perkins, of Milwaukee, Wis., committed suicide on December 1st., no cause being assigned for the act. Dr. Perkins was the son of the inventor of the Perkins' chair, a graduate of the Ohio College of Dental Surgery, and the late president of the Wisconsin Dental Society. He leaves a widow and two children to mourn his untimely death, and hosts of professional friends and associates who sincerely condole with them in their affliction.

Salmagundi (Dr. E. G. Betty), a knight of the pen, associated with the *Dental Register*, paid Chicago a flying visit last month, with a view of renewing old acquaintances among his professional brethren, and also to recuperate from the effects of a monotonous office life, which has closely occupied his attention since 1876. Salmagundi is always on the alert for all the "good things" which has a tendency in any way to improve both the mental and physical conditions of this life.

We want to call the attention of our Teutonic and other trans-Atlantic friends to the fact that the dental colleges of the United States are not private institutions

to the extent to which they surmise. Of the twenty-six colleges now in existence in this country, nine are connected with State Universities, and hence are under the control of State governments; six are dental departments of universities (other than State institutions) and medical schools, and only nine may be called strictly private institutions.

At the fifty-ninth annual meeting of the "German Association of Physicians and Naturalists," held at Berlin, Germany, Sept. 18-24, the dental profession was represented by sixty-seven members. The body corresponding to the above, in the United States, is the "American Association for the Advancement of Science," which held its thirty-fifth annual session at Buffalo, N. Y., Aug. 18 to 24, and which consists of a membership of about 3,500, of whom about twelve are members of the dental profession.

A license was issued by the Secretary of State, on December 4, 1886, to "The University College of Dental and Oral Surgery at Chicago." Incorporators, R. F. Ludwig, D. D. S., Chas. P. Pruyn, M. D., D. D. S., John S. Marshall, M. D., J. F. Austin, D. D. S., E. S. Talbot, M. D., D. D. S., and A. E. Baldwin, M. D., D. D. S., all of Chicago. There are now six dental college charters in Chicago—three colleges on paper and three in active operation. How soon the others will enter the field we are unable to state. Our motto in reference to colleges is the old and trite one of "The survival of the fittest."

The idea of the *Zahntechniker*, *Zahnarbeiter*, and *Zahnkünstler* of Germany, to expect the *Reichstag* to permit the mechanical branch of dentistry to be embraced under the laws governing the apprenticeship of various trades, is preposterous, to say the least. It would hardly be consistent for the government to establish dental departments in its various universities as it is now doing, thus recognizing dentistry as a learned art and profession, and at the same declare a portion of it simply a trade. Such a separation of the so-called operative, from the mechanical branch would be somewhat too previous, and for the present the various practitioners would do far more to elevate the profession on the continent by becoming *Zahnärzte* according to the laws of their country, then choosing for the practice the branch they prefer, than by the method they now pursue.

The dental department of the University of Berlin has met with unprecedented success during the past scholastic year. The polyclinic was visited by from 9,000 to 10,000 patients, and anesthetics were administered about 250 times. During the last winter course, in the operative department, between 600 and 700 persons received about 1,000 fillings. In the prothetic department during the same period 1770 artificial dentures were made, of which number 806 were non-practical, and 964 practical cases. At the last session there were 121 matriculates, and although formerly only from 10-12 were admitted to examinations, since the opening of the dental department the number has largely increased; and at the last examination 29 candidates presented themselves. At present the various countries of Austria, Russia, Holland, Servia, Roumania, Turkey, Japan, South America, and even the United States are represented in the list of matriculates.

The committee appointed at the last meeting of the Illinois State Dental Society, consisting of Drs. C. R. E. Koch, C. A. Kitchen, J. Frank Marriner, C. R. Dwight, Geo. D. Sitherwood, C. J. Tibbetts, C. B. Rohland and J. A. W. Davis,

have issued a circular designating Galesburg, East St. Louis, Rochelle and Danville as places for organizing local societies. The Western Illinois Dental Society was organized at Galesburg November 16th. The Southern Illinois Dental Society was organized at East St. Louis November 23d. The Eastern Illinois Dental Society was organized at Danville, Tuesday, November 30th. The Northern Illinois Dental Society was organized at Rochelle on Tuesday, December 7th. The committee very wisely leaves the matter in the hands of the local participants, acting only in an advisory way, so that dentists residing within the limits of the territory suggested will assume full control of the societies organized. We believe in home-rule, and from what has been done we argue much benefit will result from the work already accomplished at the preliminary meetings. Anything new, in theory or practice, which is evolved at the sessions of these new societies, if forwarded to the editor by the secretaries or others interested, will be published in these columns.

According to the most recent statistics, the number of dentists practising in some countries of the world are as follows :

Nation.	Population.	Year.	No. of Dentists.
United States.....	50,445,346	1880	12,017 (61 females) (1880)
France.....	37,672,048	1880	1,037 (1885)
Germany.....	45,234,061	1880	570 (18 females) (1885)
Austro-Hungary.....	37,869,954	1876	163 (2 females) (1885)
Belgium.....	5,585,846	1877	107 (1885)
Switzerland.....	2,846,101	1876	97 (1885)

In some of the cities of Germany and Austria the relative proportion of dentists to the population is as follows :

Berlin.....	1,230,000, 75 dentists.	Hanover.....	130,000, 11 dentists
Vienna.....	1,104,000, 64 "	Bremen.....	120,000, 13 "
Budapest.....	365,000, 14 "	Danzig.....	120,000, 6 "
Hamburg.....	290,000, 32 "	Strassburg.....	111,000, 4 "
Breslau.....	295,000, 13 "	Stuttgart.....	111,000, 14 "
Munich.....	241,000, 15 "	Düsseldorf.....	110,000, 4 "
Dresden.....	240,000, 16 "	Lemberg.....	110,000, 4 "
Prague.....	210,000, 7 "	Chemnitz.....	106,000, 3 "
Leipzig.....	165,000, 13 "	Nürnberg.....	106,000, 5 "
Königsberg.....	155,000, 9 "	Elberfeld.....	105,000, 3 "
Cologne.....	152,000, 10 "	Magdeburg.....	105,000, 7 "
Frankfurt.....	147,000, 23 "	Stettin.....	101,000, 5 "

The publication of dental almanacs, registers, annuals etc., is becoming a common, yet to some extent, a commendable feature of recent years. In Germany, Petermann's Almanac has done much to elevate the profession, by "showing up" illegal practitioners; there is also published a quarterly report of recent inventions by Poulson and a "Dental Kalender" by Jaskulsky. In this country we have Caulk's Annual, Beecher's Annual, a number of State and local dental lists and various other similar publications, which are of much value to all who have frequent occasion to correspond with members of the profession.



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Starting with a Gold Medal, awarded at the American Institute Exhibition at New York in 1848, the list of testimonials of similar character has steadily grown, no year having passed without contributing its quota. Wherever and whenever our teeth have been placed in competition they have carried off the honors.

This is emphatically true of the Great World's Fairs, beginning with the first (Crystal Palace), held in London in 1851, and ending with the Cotton Centennial at New Orleans, ten in all. Whenever graded premiums, denoting degrees of merit, have been granted, we have uniformly received the highest.

Three conspicuous examples may be given—Paris, 1867; Vienna, 1873; Paris, 1878. At the first Paris Exposition Universelle in 1867 a Gold Medal was awarded to Samuel S. White. No other manufacturer of porcelain teeth was similarly honored. At Vienna, Gold, Silver and Bronze Medals was conferred to distinguish degrees of merit; but above and beyond even the Gold Medal was the Grand Diploma of Honor, which was conferred as the "peculiar distinction of eminent merits." Of the hundreds of individual exhibits from the United States only four were esteemed worthy of this "peculiar distinction." Medals, especially those of Bronze, were lavishly bestowed. The Grand Diploma of Honor, the "only really valuable distinction," was awarded to Samuel S. White. It seems necessary, even at this date, to repeat the statement that the highest award received by any other manufacturer of Porcelain Teeth was a Bronze Medal. At the Paris Exposition of 1878, graded Medals were conferred. In the department of Dentistry four medals were granted to exhibitors from the United States. Three of these were of Bronze and were received by our competitors; the fourth was of Gold and was presented to Samuel S. White.

In the light of the foregoing facts a Bronze Medal would seem to have small claim to the honor of "First Medal" or "Highest Award" at either the Vienna Exposition or the Paris Exposition of 1878.

Most of the World's Fairs, beside those already mentioned, conferred but one medal on all alike whose exhibits were deemed worthy of award, relative merit being indicated, if at all, by discriminating reports of the Judges. The American Centennial, Philadelphia, 1876, is a type of these.

The announcement by an exhibitor that he received the "First Medal" at the Centennial is evidence either of misapprehension of the system of awards or of willful intention to mislead. Every medal conferred was of bronze. The highest award could only be determined by comparing the Judges' Reports on the various exhibits. In proof of our claim that we received the highest award, we submit a copy of the Official Report on our exhibit:

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3. For the various and numerous deviations from uniformity of arch and outline, simulating the irregularities of nature, and thereby disarming suspicion of their artificial character.

4. For the skillful distribution of tooth-material in such manner as to secure the greatest amount of strength with the least bulk and weight, and for the peculiar form and insertion of the platinum pins. For the maintenance of these good qualities, through an immense variety of size, color and form of each class of teeth, **EXCELLING ANY OTHER EXHIBIT.**

Signed,

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Fig. 23

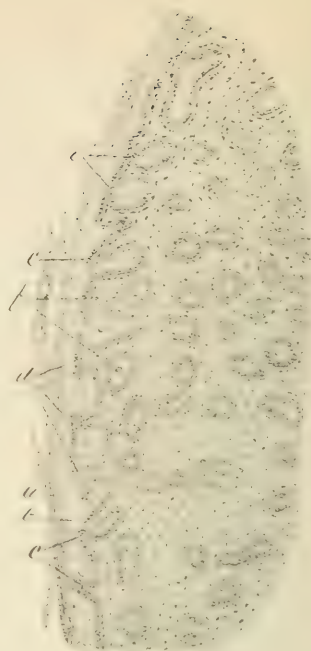


Fig. 24

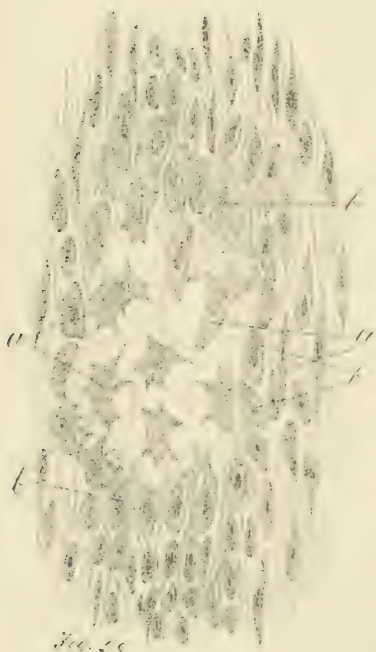


Fig. 25

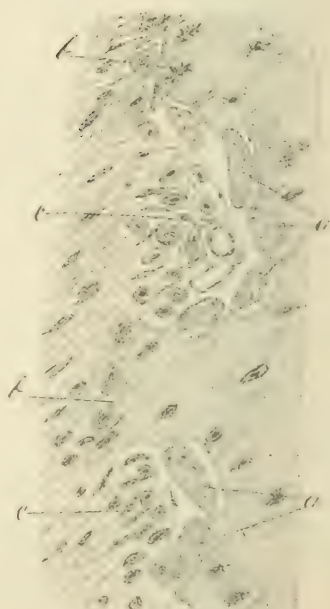


Fig. 26

# THE DENTAL REVIEW.

VOL. I.

CHICAGO, JANUARY 15, 1887.

No. 3.

## ORIGINAL COMMUNICATIONS.

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### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

BY G. V. BLACK, M.D., D.D.S.,

Professor of Pathology in the Chicago College of Dental Surgery.

*(Continued from Page 74.)*

#### DESCRIPTION OF ILLUSTRATIONS.

Fig. 25, 12th in. immersion obj. Higher eye piece. Margin of growing bone upon which the osteoblasts are very much crowded. *a*, Osteoblasts reaching to the surface of the bone by extending process-like prolongations. *b*, A cell that seems to be flattening down upon the surface of the bone. *c*, Bone corpuscles, the processes of which are seen radiating in the bone matrix. Processes are also seen extending into the bone from some of the osteoblasts.

Fig. 26, 1-2 in. obj. Cross section of a young growing bone, showing the Haversian canals and the plan of their subperiosteal formation. *a*, Outer layer of periosteum. *b*, Inner layer of periosteum. *c, c*, Spiculae of bone growing outwards into the tissue of the inner layer of periosteum. *d*, Other and older spiculae spreading out at their summits, forming portions of arches. *e*, Other spiculae, the arches of which are about closing to form Haversian canals. *f*, Complete Haversian canals, many of which are seen in the illustration.

Fig. 27, 1-8 in. obj. Absorption of bone under attached periosteum. *a, a*, Osteoclasts lying in deep excavations in the surface of the bone. *b, b*, Surface of bone, showing the fibers of the periosteum implanted in it. Residual fibers appear in the bone. It will be noted that these fibers are removed with the bone by the absorptive process. *c, c*, Masses of fetal tissue filling the areas formed by the absorption.

Fig. 28, 12th inch immersion obj. Intra-membranous formation of bone. An island of bony deposit. *a, a*, Bone corpuscles. *b, b*, Osteoblasts. It will be seen that these lie between the fibers of the membrane, so that in certain positions the osteoblasts lie with their ends to the forming bone. And for the most part the long axes of the bone corpuscles have a similar direction.

## THE CELLS OF THE PERIOSTEUM AND RESIDUAL FIBERS.

The cellular elements of the periosteum consist of developing connective tissue cells destined to form osteoblasts, osteoclasts and fibroblasts. The fibroblasts are such as are destined to reconstruct or augment in numbers the fibers of this membrane and have been sufficiently considered. However, I may say that a considerable number of connective tissue cells are found that seem not to show specific character. They seem not to be proceeding regularly to the development of fibrous material nor to be allying themselves to either of the other two forms, and are probably cells that have missed their destiny and therefore have developed irregularly. By careful search a variety of such may be found. They are mostly of round or oval nucleated forms, but occasionally irregular star-shaped forms present themselves. Such cells seem to have no function to perform in connection with this membrane or in the locality in which they are found; they are not sufficiently numerous and regular in their distribution for me to suppose that they perform some undiscovered function which renders their presence necessary. Hence the supposition that they are cells which have missed their destiny and finally disintegrate and disappear. In the progress of our study of the other cell-forms, the function of which is obvious, we shall find sufficient evidence of faulty action, or of over-activity in certain directions, which is yet within the range of what may be termed physiological errors on the part of the elementary forms. These are errors in direction of growth, or removal of tissues, which are checked before they become so pronounced as to be regarded as pathological; for instance in the case of absorption of bone beyond the needs of the time and its reconstruction afterward. The osteoblasts are usually reckoned as belonging to the periosteum by English writers, while some of the German have classed them as belonging to the bones, and designated them as the cambium layer. So far as they are connected with the periosteum at all, their place is between the periosteum and bone in the non-attached forms, and upon the bone between the penetrating fibers in the attached forms. However, the number of embryonal cells that are found among the fibers of the periosteum in the immediate vicinity of the bone, gives the impression that this portion of the tissue is the place of the development of the



osteoblasts, and that these cells are destined to become such. The most plausible supposition is that these embryonal cells are leucocytes that have wandered in here from the blood streams, not by any manner of chance, as this expression might indicate, but through the control of some unseen power which causes these cells to congregate where they are needed for building up of new tissues, or the repair of injuries to the old; and to develop into the necessary forms for this purpose, whether it be for the formation of fibrous tissues, the formation of bone, the absorption of bone, or for whatever else may be needed which is in the power of the connective tissue cell to perform.

The osteoblasts are polygonal cells which lie upon the surface of the bone and usually clothe it as epithelium clothes the mucous membranes. They vary greatly in size, so much so, indeed, that no measurement will give a very accurate idea of them. They are also placed very differently in relation to the bone in different positions and under varying conditions. In case of young bones that are rapidly growing they are often very much crowded together, and thus compressed into a great variety of forms. Occasionally they are very much elongated, as, for instance some of the cells in fig. 25, taken from a cross section of the tibia of a young kitten. Here it will be seen that some of the cells reach the bone only by extending a process-like elongation between the neighboring cells (*a*) while others seem to be flattening down upon the surface (*b*). In my studies it has seemed to me that only those cells which are attached to the bone should be considered as osteoblasts. They are undoubtedly developed from the embryonal cells of the neighborhood, but it is not until the time of their attachment to the bone that their destiny can be definitely determined. Therefore, we can hardly say that more than a single layer of these cells is ever found upon the bone in any case. More than one layer is often made to appear by cutting sections diagonal to the surface of the bone.

The more usual forms of the osteoblasts appear in figs. 17 and 18,\* where there are not too many to inconveniently cover the surface; by the slight shrinkage that is almost inevitable in histological preparations, they are made to stand slightly apart. The

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\* See illustrations in the December number.

processes of these cells appear prominently in figs. 17 and 18.\* These are very difficult of observation, and it is only under especially favorable circumstances that they appear; however, they are seen so frequently in favorable positions as to lead to the supposition that all osteoblasts that are so far developed as to come to lie upon the bone possess them.

These cells are found also lining the Haversian canals and in the interior of the bone at all points that present augmentation by growth, and they are therefore not peculiar to the periosteum. In the case of old persons and animals, when the growth of the bones has ceased, the osteoblasts are lessened in numbers, and have changed their forms in such manner as to lie upon the surface of the bone as thin flattened scales, which often can not be seen upon the margin in sections cut perpendicular to the surface; but in such sections they will appear whenever a Haversian canal is so cut as to present the flat sides of the cells to view, especially if stained with a good nucleus tinting dye. In this condition the cells seem to be inactive. In the study of young bones many regions of inactivity may be met with in which the osteoblasts present this appearance.

The function of the osteoblasts is clearly the formation of bone. There is no growth of bone without their presence. It is true that calcifications of tissue occur in various places without the presence of osteoblasts, and to the naked eye these may closely resemble bone; but upon microscopic examination they are found not to present the tissue forms of bone. These tissue forms are directly the product of the osteoblasts. The precise manner of the formation of bone is not agreed upon, two theories still being entertained. These may be briefly stated. The one view regards the osteoblasts as forming the matrix by aggregating themselves together upon the surface of the bone. This matrix thus formed is in turn converted into bone by becoming infiltrated with lime salts. All bone is shown by certain processes of chemical solution, to be composed of delicate laminæ laid the one upon the other horizontal to the growing surface, whether this be the surface of the bone proper, or the surface of the Haversian canals. It is supposed, according to this view, that these laminæ are made up from the different layers of consolidated osteoblasts. In

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\* See illustrations in December number.

this process certain of the osteoblasts persist, or are included in the formed bone without calcification, and thus become the bone corpuscles.

There are many objections to this view, one of the most potent is the fact that the osteoblastic layer is very rarely found in a condition of even semi-consolidation. The cells do not approach the loss of individuality necessary to the formation of a continuous sheet of matrix. In reasonably good preparations they always appear as individualized cells. Furthermore, we are not able by any treatment of bone yet devised, to render the outlines of such cellular elements of its matrix apparent. These objections to this view have been pointed out by a number of prominent histologists.

Another view is that the osteoblasts shed out from themselves the material that forms the bone by some process closely akin to secretion, if it be not this in fact. It seems probable that this process of secretion is performed by all of these cells that lie against the bone, and that the process is not continuous, but presents alterations of activity and rest. This will account for the lamellation observed in bone more perfectly perhaps, than the supposition previously mentioned. This kind of lamellation is also observed in the structure of the shells of shell-fish, the formation of which is generally agreed to be by a process of secretion. In the formation of bone by this process, certain cells seem to become matured and flattened down against the surface, and to sink beneath it. As a matter of fact, the bone material is built up over them and they become encapsuled, and are then known as bone corpuscles. They lose bulk in this process, so that the bone corpuscle is usually smaller than the original osteoblast. It is difficult to see the processes of the bone corpuscles in moist specimens, but they are plainly apparent in sections of dried bone, in which the canaliculi, which were occupied by them, are filled with air. The cells that sink into the bone in this manner, while not entirely regular in number and distance from each other, do present a kind of regularity which serves to give the impression of rows around the Haversian canals, and along the borders of periosteal bone (in cross sections of the long bone). These rows bear a pretty distinct relation to the lamellæ of the bone, as would naturally be expected if either



of these explanations of the process be adopted. The osteoblasts in flattening down very generally lie lengthwise upon the long bones, therefore the resulting bone corpuscle lies in the same manner with its broadest diameter to the forming surface, whether this surface be that of the wall of a Haversian canal, or the surface of the bone. Therefore, in cross sections of the long bones we get cross sections of these cells, so that they present a somewhat different appearance from that seen in the lengthwise sections.

The processes of the bone corpuscles are very numerous, and radiate in every direction through the bone matrix forming junctions with each other. (See fig. 25 *c*.) Each individual bone corpuscle with its processes seems to preside over a specific area of bone matrix, and, the impression might be entertained that this individual corpuscle had formed this area. This impression is also much strengthened when in the study of irregular formations, globules of bone are found, each showing a single bone corpuscle near its center; or perhaps several of these lying together with the area of each more or less clearly visible. In studying these, it is often difficult to escape the conviction that each osteoblast that so matures as to become a bone corpuscle really forms the area of bone with which it is immediately surrounded. However, the study of the forming surface will serve to dispel this idea and admit the assistance of osteoblasts not yet so fully matured. Again, a close study of the processes of the bone corpuscles shows that their general direction is perpendicular to the forming surface of the bone (fig. 25), so much so that with low powers a striation in this direction often becomes prominent. Much of this is due to the processes reaching far into the bone before the encapsuling occurs.

In those portions of bone formed under an\* attached periosteum particularly if the penetrating fibers are numerous and large as shown in figs. 20, 21, 23 and 24\* the bone corpuscles do not lie with their long axes horizontal to the surface of the bone, but in a line parallel with the penetrating or residual fibers. This is explained by the fact that the osteoblasts are held, or lie between the fibers in such a way as to present their short diameters or ends to the surface of the bone, which position they retain.

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\* See illustrations in December number.



It serves as a mark designating the portions of the bone formed under a periosteum of this character even when the fibers themselves can not be seen. This applies to all those forms of the attached periosteum in which the penetrating fibers are large and thickly set. When the fibers are more sparsely distributed the osteoblasts and the resulting bone corpuscles, may lie in the same relative position to the forming surface, as in case of the non-attached forms.

The osteoclasts, myoplaxes or giant-cells, present various forms, vary indefinitely in size, and are usually multinucleated. (See figs. 19 *f, f, f*, 24, \* *g* and 27, *a, a*.) Occasionally, one may be recognized with but a single nucleus, and I have seen them containing as many as twenty-four. From four to ten is a more common number. The general inclination is to the round or oblong form. They are very rarely branched and present no processes. Such forms of cell may be found in other localities, and we can only recognize them definitely as osteoclasts, when found in contact with bone, or some of the hard tissues undergoing absorption. In such positions, they uniformly lie in little bay-like excavations in the surface, known as the lacunæ of Howship. They conform in certain measure to the depth and size of the excavation in which they lie, which fact seems to argue that most of their growth has occurred in this position. I often see very small ones in small excavations and large ones in correspondingly large excavations. But in absorption of greater extent, such as in the hollowing out of the shafts of the long bones, we often find very large cells lying on the surface of the bone without any lacunæ whatever. I may say, however, that the number of such cells that are sometimes seen in the tissues of the bone marrow, detached from the bone, but in the neighborhood of extensive absorption, has given me the impression that possibly these cells may in some degree possess amœboid movement during life, and therefore, a limited power of migration.

The function of these cells is sufficiently obvious. They dissolve the bone with which they are in contact, probably by the secretion of a solvent fluid, making room for themselves, and in this way remove the surface of the bone, i. e., cause its absorption. In this way the enlarged ends of the bone are trimmed

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\* See illustrations in December number.

down to the size of the shaft (in the elongation of the bones during growth), and the central cavities are hollowed out. Channels are burrowed through and new bone again deposited, thus removing the old and filling in with new. In this work the osteoblasts and the osteoclasts are continually replacing each other, the osteoblasts building and the osteoclasts tearing down; and by the joint action of these, both the formation and the conformation of the bones are effected.

#### FORMATION OF BONE.

Histologists have usually described three modes of the formation of bone. These relate to the conditions under which the bone is formed, and are the subperiosteal, intra-cartilaginous and intra-membranous. The subperiosteal is not a *de novo* origin, but a growth superadded to previously formed bone, or laid down upon the surface of cartilage. This has been in a measure considered while describing the functions of the osteoblasts, but certain points should be elucidated. The surface of a growing bone is not smooth and compact, but is continually thrown into convolutions by the upward growth of spiculæ, or upon long bones, of long ridges more or less sharp, arranged parallel with the long axis and which often rising into the tissues of the periosteum, form arches by spreading laterally and joining with like ridges on either side, as shown in figs. 23\* *a, a*, and 26 *c, c, c*, both of which are from sections cut across the long axis of the formation. In this manner new Haversian canals are being formed into which capillary vessels are sent to supply the parts with blood. By this means the extent of surface to which the osteoblasts are applied for the building of bone is immensely augmented. As one set of Haversian canals is completed in this manner, indeed often before their completion, new spiculæ, or ridges of bone, are again projected from the surface to form others exterior to these. The Haversian canals thus formed are already lined with osteoblasts, which continue the work of deposit of bone upon their walls, and thus the bone grows not only upon its surface, but on the walls of the canals also. This is best seen in fig. 26 in which a comparatively low power is used for the illustration of a portion of a cross section from the tibia of the

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\* See illustrations in December number.

kitten. At *c, c*, are shown upward growths of spiculæ into the tissue of the inner layer of the periosteum. At *d*, these are throwing out processes from their summits. At *e*, these are just meeting together, and at *f*, fully formed canals are seen. It will be noted that the bone is thickly studded with them.

The soft tissue as it is included in these Haversian canals changes its type very noticeably, losing most of its fibres, and becoming still more like fetal tissue, presenting many undeveloped cells which in the main lie quite widely apart, giving a tissue of very simple character.

As has been indicated, the subperiosteal bone is deposited in laminæ that are concentric to the axis of the shaft of the bone, and the position of the bone corpuscles corresponds with these, presenting their flattened sides to the surface, and therefore in the absence of these convolutions of the surface, present laminæ arranged around the shaft. But in this convolution of the surface, the arrangement of these laminæ, and also the position of the bone corpuscles is in accord with the surface at the time of its formation. It will be seen that this produces a seeming confusion in the laminæ and position of the corpuscles in the portions of bone thus formed. The bone formed on the walls of a Haversian canal presents concentric rings around the axis of the canal to which the bone corpuscles also present their flattened sides, thus distinguishing this bone from the subperiosteal formation. These rings of Haversian bone are known as Haversian systems, and they play a very important part in the growth of bone.

This subperiosteal formation of Haversian canals is not confined to the non-attached forms of the periosteum, but occurs beneath the attached also, though less regularly. It seems that where the penetrating fibers are very large and numerous, very few such canals are formed. In these the upward growth of the spiculæ is generally along the line of some of the fibers, and as the arches are thrown out on either side, the fibers of the region are included in the bony formations without disturbing their position, but that portion of the fibers which is included in the Haversian canal soon disappears, so that the Haversian bone has very few or none of these. (Figs. 21 *h, h*, and 23 *b, b, b, b*.) In some instances in which the fibers are unusually large and

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\* See illustrations in December number.



strong, as in the alveolar process, which I will describe in connection with the peridental membrane, the fibers are often seen stretching across fully formed Haversian canals, thus showing a tendency to persist, or that large and strong fibers are removed more slowly. In many instances, however, especially about the bones of the face where there are unusually strong periosteal attachments, the subperiosteal growth of bone is originally destitute of Haversian canals and thickly set with penetrating, or residual fibers. These fibers are not a part of the bone *per se*, but are the accident of the formation. In other words, the method of making firm hold upon the bone, is the implantation of the fibers by building the bone about them; and after enough of the length has been included in this way to serve that purpose, the deeper portions are of no further use, and as a matter of fact, are, according to my own observation, removed.

This is accomplished by the removal, not of the fibers simply, but of the whole mass of bone thus formed, by the successive burrowing of Haversian canals through its substance, and the formation of what may very properly be termed secondary Haversian systems. I have illustrated this in fig. 24\* from a section from the lower jaw under a muscular attachment. Here it will be seen that the penetrating fibers of the periosteum are strong and thickly set, and though the surface of the bone presents some low spiculæ reaching out along the line of some of the fibers it is rarely a solid growth of subperiosteal bone. A little way inward from the surface, however, there is a Haversian canal which fortunately presents a direct lengthwise section. On the walls of this canal from the letter *c* to the line drawn across at *e*, Haversian bone is deposited, and the canal itself is lined with osteoblasts. Above the line *e*, there is no deposit of Haversian bone, and instead of osteoblasts, the walls are lined with osteoclasts, which lie in little bay like excavations, *g*. In this part of the canal the excavation of the subperiosteal bone is in active progress, while in the parts below the line *e*, the excavation is being filled up with Haversian bone. This is readily distinguished from the subperiosteal bone by noticing three points. 1st. The Haversian bone is slightly different in shade from the subperiosteal. 2nd. The long axis of the bone corpuseles lie in a different posi-

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\* See illustrations in December number.



tion, or in the direction of the long axis of the Haversian canal. 3rd. It has no residual fibers. Now if we scrutinize the original walls of the canal where the Haversian bone joins the subperiosteal, it will be seen that they are everywhere indented with the bay like excavations as pointed out at *f, f, f*. These may be contrasted with similar Haversian growths, shown in Haversian canals of subperiosteal formation, in figs. 21\* and 25, which do not show these bay like forms. Wherever these are found they are the marks of the work of the osteoclasts, and show the canals, or Haversian systems, deposited therein to be secondary formations, that is to say, formed by the removal of previously formed bone. In my studies of the bones of the jaws in animals of different ages, I find that almost the entire original formation of bone is removed in this way, and replaced by Haversian bone. This seems to be especially the case at all points where there are many residual fibers, so that in old bones these fibers penetrate to but a slight depth, otherwise they occur only at isolated spots that have been missed by the process of removal. In the growth of the long bones, where the residual fibers are localized at particular points, the same removal seems to occur. In the regions of the non-attached periosteum this kind of regeneration may also be found, but it seems not so complete.

These residual fibers are known in our literature as penetrating fibers, or fibers of Sharpey, who first described them as fibers penetrating the laminae, i. e., passing in a direction transverse to the laminae of bone. While this observer with others who have followed him, seems to have recognized that these were in many instances derived from the periosteum, and were irregular in their occurrence, it seems that the fundamental reason for their appearance was missed by them, which is probably to be explained by the fact that in their study of the subject, the variety of the fibrous forms and purposes of the periosteum had not attracted special attention. It will be clearly seen that it is only by a close study of this membrane in different positions, giving attention to the purposes it subserves, and the forms adapted to these, that we may gain a clue to the uses of these fibers, and become able to know in advance where to find them in abundance and thus be

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\* See illustrations in December number.

able to follow up the study of them satisfactorily. These localities have been sufficiently indicated.

The function of these fibers, it seems to me, is physical and entirely passive, that of giving firm attachment to the periosteum and the tissues it supports. They may give direction in many instances to the growth of bone by forming a kind of ladder, or central line, around which osteoblasts may concentrate, but in no other way contributing to that growth. The active functioning process is to be sought for in the act of the formation of the fiber, not in the fiber after its formation, and I see no reason for considering these in any other light than as white connective tissue fibers, subserving a specific purpose, that of giving support. I should, therefore, regard the term *osteogenetic fibers* consisting of *osteogenetic substance*, applied to them by Sharpey and adopted by many histologists, as an error. It is true, as pointed out by the above named observer and others, that in the upward growth of spiculæ of bone, for the formation of Haversian canals, the line of these fibers, if they are present as penetrating fibers, is followed, and that the osteoblasts are arranged about them and seem to be clinging to them. It is also true, that we find these osteoblasts arranged about a center of advance of bony spiculæ in the absence of such fibers, where the growth is taking place under the non-attached forms of the periosteum. I have scrutinized this point closely, employing as aids the various plans of preparation and staining, without being able to make out any such fiber or fibers, that would seem to be in any way directing the growth, but on the contrary, have found the growth of such spiculæ proceeding across the line of the horizontal fibers of the non-attached forms of the periosteum. Again, as has already been stated, even in the attached forms, where the upward growth of spiculæ follows the line of particular fibers, the processes given off at either side, forming the arch connecting with neighboring spiculæ, for the formation of Haversian canals, pass directly across the direction of these fibers without disturbance of their position. These facts show that the formed fibers become passive physical agents, and have not a genetic function. It is probable that in many instances, as in the intra-membranous formation of bone, which will be studied later, the formation of fibers is a necessary step in advance, affording a kind of framework or lattice,

as a basis for the new growth, but in every instance, the work of deposit of new bone is performed in the presence of, and by, the osteoblasts, which are specialized from the embryonic connective tissue cells, and are in no way dependent upon the fibers, except as these afford a meshwork, in which they may undergo their developmental stage.

The condition of these fibers as to calcification is of interest, although not very positively made out. In many instances they appear to have become stiffened by the reception of lime salts in advance of the line of the forming bone, and thus become a nidus for the upward growth of spiculæ. In other instances appearances indicate quite the reverse condition, and in some very thin sections cut across the fibers, I have found them so loosely attached near the border of the forming bone, that they have fallen out of their alveoli. Occasionally quite deep in the substance of the bone I have found them protruding from the broken margins of the section, as illustrated at *g, g, g*, in fig. 21.\* Furthermore, in pulling apart the laminæ of subperiosteal bone, we may find them withdrawn to some length as has been so admirably illustrated by Sharpey. (Quains Anatomy). These facts show the loose connection of the fibers with the bone substance, but it must be remembered that this is only after the withdrawal of the lime salts by the process of decalcification in the preparation of the tissue. Before the decalcification, these points can not be demonstrated. It therefore appears that the connection of these fibers is not intimate with the basis substance of the bone, but that they are rendered firm and seemingly of equal consistence with that matrix, by the common reception of lime salts, in the process of calcification.

With the description given above, and the illustrations presented, it will become clear that isolated patches of these fibers may be found that do not reach the surface of the bone, having been cut off by the formation of Haversian systems. Again the fibers may be cut away by absorptions occurring beneath the periosteum, the portions so absorbed being refilled with bone, and the subperiosteal growth proceeding as before. I have been so fortunate as to meet with examples of this in my sections, one of which I present in fig. 27. This fact serves also to explain

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\* See illustrations in December number.



some things which heretofore seemed dark in the formation of the cementum on the roots of the teeth, which will be studied later. In the figure it will be seen that at *a, a*, there are several osteoclasts lying in deep excavations, and at *b, b*, there are points of the unabsorbed surface of the bone in which the fibers of the periosteum are seen implanted. The fibers appear also deep in the bone, and it will be seen that in the region of the absorption *c, c*, these have been removed, together with the bone, and the space filled with tissue of a marked fetal type, but containing a large number of developing cells. In many instances I have seen such absorptions that have been refilled with bone, and the fibers reattached only after much of this secondary bone had been deposited. This figure is taken from the margin of a considerable absorption which was taking place on the inner (lingual) surface of the lower jaw, about the position of the cuspid tooth and near the attachment of the mylo-hyoid muscle, and was probably affecting some change in the form of the bone. It shows the nature of the absorptive process. Formerly it was supposed that the bone corpuscles took part in the process, enlarging the capsule in which they are lodged, but my own observation shows quite conclusively that they take no part whatever. It is the work of the osteoclasts entirely, at least in physiological absorptions.

*Intra-membranous formation of bone* occurs only in the tabular bones of the cranium and face, and possibly a portion of the clavicle. Its only difference from the subperiosteal formation is that the bone arises *de novo* in membrane. In all other respects it is subperiosteal. The description of it may therefore be limited to the beginnings of the formation. The form is first laid down in what appears to be ordinary fibrous membrane, in which there is seen a tendency of the fibers to aggregate into bundles, which are often condensed into fibers so large as to almost merit the name coarse fibers. The bulk of the membrane is, however, composed of fine white connective tissue fibers. These decussate with considerable freedom, seemingly with a tendency to form an irregular meshwork. The fusiform nuclei are abundant and of the usual form, and there is seen quite a large number of undeveloped connective tissue cells. At the point where bone is about to be laid down, these latter may be noticed to aggregate



themselves together and grow larger, elongating in a direction parallel to the fibers with which they are associated, but not becoming distinctly fusiform. These come to be closely packed together at a single point, and they may form a row of some length, or elongated islands, which take staining agents more strongly than the other tissues. Passing these in a direction toward the more central parts where bone formation has begun it will be found that this is laid down in the center of an exactly similar cluster of cells. As the deposit of matrix and lime salts is laid down, the cells seem to spread asunder as if to make room, while one, two or more remain in the calcified mass as bone corpuscles. These islands may be found of any dimensions, from that of the smallest island in which a single cell may be distinctly recognized as a bone corpuscle, to considerable areas of bone, all presenting the same characters. The usual forms of the osteoblasts are seen on the margins of the formed bone. I have represented one of these islands in fig. 28, from the parietal bone of the human fetus in which *b, b,* point out individual osteoblasts and *a, a,* bone corpuscles. The latter appear unusually large in all of the very young intra-membranous bone that I have examined. The osteoblasts cluster very thickly around the margins. The fibers of the membrane do not at first give place to the bone formation, but are included within it, as shown in the figure, and those osteoblasts that lie at the ends of the formation are apt to present their ends to it, seemingly constrained to this position by the presence of the fibers, as in the attached periosteum. Different islands present much difference as to the included fibers, some having very few, while others, as the one chosen for illustration, have many, and the effect of these on the disposition of the cells around the margins is plainly apparent. For a little way outside the layer of osteoblasts that are in contact with the formed bone, the developing cells are thickly placed, and are evidently destined to become osteoblasts. The islands of bone thus formed grow into spiculæ and in time unite with others in the neighborhood, and at first form a kind of bony latticework, the openings in which are finally filled to form the complete bone. This is then extended until joined to its neighbors by suture.

## CYLINDER FILLING.

By GEO. J. FRIEDRICH, M. D., D. D. S., NEW ORLEANS, LA.

In tracing the history of metallic fillings and the different methods employed in their working, we find that, in the primitive state of dentistry, gold, like lead, was made up into a pellet, packed into the cavity, dressed off and polished with a burnisher, and that when gold foil was prepared for dental purposes the form of application became changed. A sheet was either folded into a strip, rolled, or twisted into a "rope," which was packed by forcing it into the cavity in folds. We find it stated that "about the time from 1840 to 1845 isolated members of the profession began to coil ribbons of gold upon a winder, thus forming cylinders. These cylinders, however, were still inserted upon the principle of the old-time pellet, being wound so tightly as to be little compressible and to a size just sufficient to enter the cavity, into which they were forced, first by small and then by larger instruments, the coil being of sufficient depth to extend above the margin."\*

"Sponge," "crystal," or "crystalline" gold (as it was variously called) followed next and was hailed by the profession with acclaim. Its approbation and advocacy by members of the profession, as well as the merits of the article itself, secured its very general use at the time, and it is still largely employed, although not to so great an extent as formerly. The introduction of sponge or crystal gold led to the discovery of the cohesive or welding property. Thus far we find there has been a change of form of the material used, yet the method employed still remained the same, but the introduction of cylinder filling, as demonstrated by Dr. Clarke of New Orleans, and Dr. Taylor of Cincinnati, involved a new principle—that of lateral pressure by wedging. In fact, instead of calling it the method of cylinder filling, it ought to be denominated the wedging system of filling. The Herbst method brought so prominently of late before the profession, is called the rotating system of condensing the gold in the cavity. The claims advocated for this system of filling are, 1st, close and certain adaptation to the walls or parietes of the cavity, and, 2d, the saving of time, obtaining results comparing favorably with operations produced by any of the other methods now known and

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\*History of Dental and Oral Science, p. 53.

practiced by the profession. In these particulars the Herbst method bears some analogy to the cylinder or wedging system. Granting that the same results can be obtained as by the cylinder method, we find, however, two factors entering into the operation absolutely necessary for successful results, and without which no filling can be inserted by means of the Herbst method,—these are the rubber dam and the matrix. As in this respect, neither the one nor the other of these factors are requisite to insure success by the cylinder method, the palm of merit or superiority should be awarded to that system of filling; for, while the matrix is being prepared and the dam adjusted as preliminaries to an operation by the Herbst method, the operator with cylinders would during that time, have completed his filling and secured as close an adaptation of the gold to the parietes of the cavity as could have been secured by the more roundabout and tedious method.

#### THE METHOD OF PREPARING THE CYLINDER.

The necessary implements to make cylinders are, a paper-cutter for folding the foil of the desired widths, a watchmaker's broach broken off about a quarter of an inch from the shank, or an old engine-bur or drill filed down tapering to a point to the thickness of a cambric needle, leaving the sides either flat or three-sided, on which to roll the folded strips of gold to the desired thickness. There is one thing, however, that must be borne in mind, and that is, when you fold a sheet of foil its flexibility decreases and it, as a mass, becomes less pliable. Therefore, in order to make small cylinders and yet have them soft and pliant, the sheet must be cut or divided into halves, thirds and fourths, as it stands to reason that if we fold a sheet upon itself, we shall have a sheet one-half of its original size and in the shape of a parallelogram. If this process is repeated five times, we shall have a strip of foil thirty-two times the thickness of the original sheet, and in order to make narrow cylinders a third of a sheet of foil must be folded on itself this number of times. To roll the folded strips of foil into cylinders the *modus operandi* is this: Place the folded strip of foil between the thumb and forefinger of the left hand, and your instrument or winder, on which you intend to wind the strip, in your right hand. Now, placing the winder on the end of the strip, which you are holding in the left



hand, bearing with it down on the foil, commence rotating slowly towards you, at the same time letting the thumb of the left hand aid the right in the movement to start the coil—for herein lies the main trouble. After a roll is started, the whole strip can be wound into a cylinder, or when the desired size of the cylinder is obtained the strip of foil can be torn asunder or pinched off, and the same process proceeded with making two or more cylinders, until the strip is used, so that, instead of rolling it only into one cylinder, you can make them any size you may desire as to thickness. The length of the cylinder is regulated by the folding of the foil. If you roll a broad strip of foil, the length of cylinder will be in proportion to width of strip. The foil may be rolled tight or loose. When rolled tightly the cylinders are less pliant than when loosely rolled.

The method of manipulating, or in other words filling with cylinders, is as follows: With a pair of tweezers or Taylor's filling forceps, take up the first cylinder of as large a size as can be conveniently introduced into the cavity to be filled, which cylinder should be of sufficient length to protrude somewhat above the orifice of the cavity, so that there will be enough material for condensing when no more gold can be inserted. This first cylinder is then forced against the parietes of the cavity by a suitable plugging instrument, when space will be obtained for the introduction of the second cylinder, which in turn is pressed against the first, and so on until the cavity is full, though not densely packed. A round pointed plugger (of these the operator should have different sizes) is then forced between the cylinders in order to make room for more, while at the same time packing the gold already in the cavity into a more solid mass. Continue this process until satisfied that no more cylinders can be inserted (care being taken that none of the cylinders choke, but go to the bottom), when the filling will be completed and packed as solidly by lateral pressure as the strength of the tooth will admit. The surface should then be condensed, dressed down and polished.

The points of excellence attained by this method of filling may be enumerated as follows:

- 1st. A sheet of foil is still a plate of metal retaining its due



share of tenacity. When the sheet is folded the tenacity increases; therefore, when a cylinder of gold foil is placed in a cavity, you have a laminated mass of gold which reaches from the bottom to the surface. Consequently a cylinder filling never comes out by piece-meal; it either comes out *en masse* or else it stays where it has been placed.

2d. Lateral pressure being brought to bear on the gold while still soft, from the commencement and continued to the end of the operation, a perfect adaptation to the parietes of the cavity must ensue.

3d. When a tooth is strong enough to bear the pressure, a solid and impermeable filling can be put in by lateral pressure alone which is a desirable item in difficultly located cavities—such, for instance, as proximal cavities between the cuspids and molars.

4th. No retaining points are requisite to keep the gold *in situ*.

5th. Rubber dam may be entirely dispensed with, and no matrices are required in filling proximal cavities; for, if you let your cylinders protrude sufficiently beyond the orifice of the cavity, they can be finished up to give the desired fullness.

6th. Sub-marine fillings can be made with them. Any one can convince himself that moisture does not prevent the cohesion of gold (or even what is called non-cohesive gold). A demonstration of this can be made in any dental laboratory in fifteen minutes, for it merely depends upon the particles of gold being brought into sufficiently close contact. Take a draw-plate, fill any of its holes with wet cylinders, make a follower either of iron or steel to fit the hole, then place the draw-plate in a vice and bring pressure on the gold with the follower, and as liquids are not compressible, the moisture will be seen to be oozing out until entirely expelled, and when the gold is sufficiently condensed it will be found, when knocked out of the hole, to be a solid coherent mass.

7th. By this method an impervious filling can be made with more certainty, in less time and with less labor than by any other mode practiced up to the present time. For after a cavity is prepared and ready for the gold, it can be filled by this method, provided the cylinders are ready made, in ten minutes, whether the

cavity is large or small, whether it is situated on the grinding surface or in a posterior proximal cavity of a molar; that is, your gold is packed ready for surface condensing and finishing in the time above specified.

8th. Crystal gold, or cohesive foil, can be combined with it. By filling the cavity from two-thirds to three-fourths full with cylinders, the remainder can be filled with cohesive foil or crystal gold, thereby saving much time, while securing all the advantages and results, which may be obtained by the sole use of either one or the other of these forms of gold.

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### ORAL SURGERY.

PROF. BROPHY'S CLINIC AT THE CHICAGO COLLEGE OF DENTAL SURGERY.

Reported by MR. J. R. PAGIN, of the Class.

Mr. F. P., age thirty. Occupation, waiter. The patient exhibits a swelling involving the tissues covering the right superior maxillary bone. Ten days ago the right superior first molar was extracted, there having been an abscess at the apex of the palatal root, with its fistulous opening on the palatal alveolus, the removal of the tooth was followed by a profuse discharge of pus. There is now a discharge of pus from the nose. This is generally more noticeable in the morning. Further examination reveals an opening into the antrum of Highmore. The patient presents symptoms of septicæmia. We diagnose the case as abscess of the antrum. By carefully observing the steps taken in the treatment of this case, and noting the changes and improvement in the condition of the patient, you will in the future be able to treat these troublesome affections with reasonable assurance of success. The disease of the antrum was unquestionably caused by the irritating influences of the pus which burrowed into this cavity from the alveolar abscess of the molar tooth. The pus which is found to be accumulating in the nasal passage escapes from the antrum through the natural opening between these cavities. The explanation of its presence in the morning is on account of the patient lying upon the opposite side, and the consequent drainage of the antrum. Abscess of the antrum has its origin more frequently from diseases of the teeth than from all other causes.

The anatomical relation of the teeth to the antrum is such that the roots of the molar teeth not infrequently penetrate the floor of this cavity; the apices of their roots being covered only by the pericementum, and mucous membrane which lines the antral cavity. Frequently, in pursuing our anatomical studies of this cavity, we find an exceedingly thin plate of bone between its floor and the roots of the teeth. Thus the pus in making its way to the surface in the direction which affords the least resistance sometimes escapes more easily from alveolar abscesses into the antrum, than through the alveolar processes into the mouth. This pus soon disorganizes and becomes putrescent, and a source of irritation to the mucous membrane, which, in turn, takes on inflammation, often ending in suppuration.

If by this inflammatory process the natural opening into the nares be closed, the patient will experience severe pain after the antrum has been filled with pus, in consequence of pressure of the contents upon the surrounding tissues. Frequently there will be heavy dull pain on the affected side accompanied with swelling of the cheek and a closing of the eye. If the surgeon does not establish an artificial opening for the escape of pus, it may burrow through the posterior wall of the antrum immediately above the tuberosity of the maxilla, which wall, as you know, is exceedingly thin, or through the bone intervening between the nares and antrum, or through the floor of the antrum and make its exit at the side of the neck of the tooth. It may pass upwards through the floor of the orbit and make its exit at the inner canthus of the eye. It may cause absorption of the bones, so that they will become as thin as parchment, and may cause necrosis or severe neuralgia. In the case before you an opening has been established by the extraction of a tooth from which the disease had its origin. This furnishes the best possible drainage, as it opens the cavity at the most dependent point of its floor; for good drainage is essential to success in the treatment of this disease. The opening into the cavity through the palatal root is not large. We will administer an anæsthetic and increase its size.

By the use of the surgical engine and suitable points, we enlarge the opening to about four lines in diameter. The usual practice is to insert a tube and secure it to an adjacent tooth. The appearance of this case leads me to believe that a tube will

not be necessary at present. Christopher Heath, in his work on Diseases and Injuries of the Jaws, recommends perforating the antrum through the anterior wall, immediately below the malar bone, at a point a little beneath the attachment of the levator anguli oris muscle. This method is objectionable for the reason that perfect drainage can not thus be secured.

The treatment to be employed in this case should be antiseptic. By the use of this large syringe we will inject a two and one-half per cent solution of tepid carbolic acid, and repeat two or three times a day, thereby thoroughly cleansing the cavity. The prognosis in these cases is generally favorable. In this case there is no denuded bone within the antrum. With judicious application of antiseptic and stimulating washes a cure may be expected within two months, or possibly sooner.

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## PROCEEDINGS OF SOCIETIES.

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### CENTRAL ILLINOIS DENTAL SOCIETY.

PEORIA, OCTOBER 12, 13 AND 14, 1886.

SOME THOUGHTS ON ANÆSTHETICS—BY DR. H. H. FITCH, PEKIN.

*(Continued from Page 89.)*

From the earliest ages physicians have attempted by various expedients to diminish the pain of surgical operations.

We are told that the old Assyrians compressed the veins of the neck to alleviate the pain of circumcision.

The ancient Egyptians used various drugs, of which we have no exact information, to produce sleep.

From the earliest times in India, opium and hemp have been used both as stimulants and narcotics.

Herodotus states that the Cythians were in the habit of producing intoxication by the inhalation of the vapors of a peculiar kind of hemp.

With the decline of practical science during the so-called Dark Ages, faith cures, miracles and superstitious mummary, drove out the exact knowledge of drugs. While the ignorant zeal of the pious monks destroyed the libraries, either by burning



the books, or, still worse, by effacing the original writing, and covering the precious parchment with tales of saints, angels, demons and martyrs—of ghostly interference with human affairs, holy relics and incantations, fetiches and priestly mumblings took the place of medical skill.\*

In 1784 Dr. Moore of England directed attention to the use of clamps on the body of the nerves to produce anæsthesia of the parts to which the nerves were distributed.†

In 1799 Sir Humphrey Davy proved the anæsthetic properties of nitrous oxide.

Quite a full account of his experiments will be found in Sir David Brewster's "Letters on Natural Magic." [J. & J. Harper, New York, 1834.]

Nitrous oxide is called "Paradise Gas" by Sir David Brewster.

Dr. J. F. B. Flagg in his work "Ether and Chloroform," [Lindsay & Blakiston, Phila., 1851] says:

"Dr. Simpson has furnished a very interesting paper, in which he shows that ether was known in the 13th and 14th centuries, that its formation was described in the 16th by Valerius Cordus, that it was first designated ether by Frobinus in 1730. It also shows that the idea of painless operations is of very ancient date a remarkable receipt for which being given as early as the 13th century by Theodoric, described as *spongia somnifera*."

It appears from well substantiated documents that in the year 1844 Mr. Horace Wells of Hartford, Conn., a dentist by profession, becoming seriously troubled with an aching tooth, conceived the idea of placing himself under the influence of nitrous oxide gas while submitting to its extraction. The experiment succeeded far beyond his expectations. Mr. Wells immediately made known his discovery to friends in that city, operating upon quite a number with equally happy results.

He, by advice, soon visited New York, where he was told

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\*Destruction of the Arabic Libraries by Zimines. See Prescott's "Ferdinand and Isabella," Part 2d, Chap. 6.

Destruction of the Aztec Hieroglyphics and Paintings in Mexico. Prescott's "Mexico," Book 1, Chap. 4, p. 101.

†Long after the battle, Eylan found in the wounded, who required amputation, remarkable insensibility, owing to the intense cold. This is the first use of cold as an anæsthetic. "Anæsthetic Manual," p. 14.

that sulphuric ether would have precisely the same effect as the article he was using. He used the ether in one or two cases, and preferred it for the reason that no labor was required in its preparation for immediate use.

But upon returning to Hartford he was persuaded to abandon ether, his medical friends entertaining some doubts of its perfect safety.

In the fall or winter of that year (1844) he visited Boston for the purpose of calling the attention of medical men to the importance of his discovery. Mr. Wells informs us that on his visit to Boston, on the occasion above alluded to, he saw both Dr. Jackson and Dr. Morton, and they both discouraged his proceeding further with this inhaling matter, denominating it a humbug.

No one of sufficient influence could be found in Boston to extend to Mr. Wells a helping hand on this occasion, in this his most exciting moment. He returned to Hartford immediately, baffled, dejected, and almost heart-broken. The reaction threw him upon a bed of sickness, which lasted some months. At length he recovered, and resumed his business, trusting to his success in his private practice for the eventual reputation of anæsthesia.

During the summer or early fall of 1846 (nearly 2 years after the visit of Mr. Wells to Boston) the public was startled by the announcement of the most wonderful discovery of the age.

The surgeons of the Mass. General Hospital, together with a few initiated, became astonishingly fervent in their praises of an invention which it required the combined efforts of scientific attainments and mechanical skill to develop. Classical erudition came to their aid, and good old sulphuric ether was made to succumb to the name of "Letheon."

A circular was broadly cast through the length and breadth of the land, announcing that "a *compound* has been discovered which, by breathing into the lungs, induces so deep a slumber as to enable us to perform the most painful surgical operations with entire unconsciousness on the part of the patient."

In connection with this announcement are the names of Drs. Jackson and Morton, as the combined discoverers. A patent is sought, and under the protection of a *caveat*, agents are appointed

to traverse the country, selling to all who are willing to buy, the right to use the "compound," thus *qualifying everybody* and *anybody* in the use of this powerful agent who would pay the sum. In cities of over 150,000, \$200 for 7 years; in cities of over 50,000, but less than 150,000, \$150 for 7 years; and so on, down to cities under 5,000, \$37 for 7 years. Soon after the *caveat* had been secured, a rupture occurred between the two professed discoverers which has led to a vast amount of controversy, much bitter feeling, and some *truth*. They each deny that any credit belongs to the other. This is *true* to a great extent. I feel anxious to draw this part of ether history to a close, and only desire to state what seems to me the only rational conclusion as to its discovery.

1st. To Sir Humphrey Davy unquestionably belongs the credit of first suggesting the idea of inhaling into the lungs some agent which would obtund sensibility during painful surgical operations.

2d. To Mr. Horace Wells of Hartford, unquestionably belongs the merit of having first demonstrated this happy idea, by using both nitrous oxide and sulphuric ether for this purpose.

3d. To Dr. Charles T. Jackson of Boston the thanks of the world are due for lending that influence which his well earned reputation so admirably qualified him to do, in establishing confidence in the public mind in the use of sulphuric ether as a substitute for nitrous oxide.

4th. To Dr. W. T. G. Morton, dentist, of Boston, we are under obligations for his indefatigable exertions in securing the attention of leading medical men on this subject, and thus rapidly expediting the adoption of sulphuric ether in surgery.

I have taken this time, Gentlemen of the Society, to recall the claims of Horace Wells to our lasting gratitude, because, in a recent work on Local Anæsthesia by J. Leonard Corning, the full credit of this great discovery is given to Dr. W. T. G. Morton, and Mr. Horace Wells is simply referred to as follows: "In 1844, Dr. Colton administered nitrous oxide to a dentist, Horace Wells by name, from whom a large molar was extracted without pain." [P. 14, "Local Anæsthesia." By J. Leonard Corning. New York: D. Appleton & Co., 1886.]

Let us think and speak kindly of Horace Wells, whose grand

idea was denounced as a "humbug" by the would-be patentees of the same.

In the words of the Green Mountain Poet —

" God bless the man who first invented sleep ! "  
So Sancho Panza said, and so say I :  
And bless him also, that he didn't keep  
His great discovery to himself ; or try  
To make it—as the lucky fellow might—  
A close monopoly by patent-right.

The general principle of all anæsthesia is the poisonous or narcotic dose of certain agents, all of which have a stimulant as well as a narcotic action : Opium, India hemp, tobacco, alcohol, ether, chloroform, nitrous oxide, etc., etc.

The difference between the stimulant and narcotic action of these agents is one of kind and not of degree. The stimulant dose does not demand an increase, as does the narcotic dose.

Vincent Richards concludes that the excessive use of opium by the agricultural classes of Orissa, who are the chief consumers, is very rare indeed. Its moderate use may be and is indulged in for years without producing any decided or appreciable ill effect, except weakening the reproductive powers. (" Britannica," p. 793.)

The exhilaration of spirits from the stimulant action of cold on " a fine, bracing morning," and the benumbing influence of frost as it overcomes the vital force and threatens that fatal sleep, are distinct and physiologically *inverse* actions of the same agent.

The action of alcohol in its various forms of exhibition are too familiar to require more than the simple statement that the stimulant dose and the narcotic dose are quickened and strengthened by nervous action on the one hand, and enfeebled by nervous co-ordination on the other.

The familiar name of Laughing Gas came from the common use of Nitrous Oxide in its stimulant (small dose) capacity for exciting merriment.

The *London Lancet* gives cases of poisoning from the excessive use of tea, and a long series of observations showed that an average of five or more cups per day was producing certain forms of paralysis.



The stimulant and the narcotic dose of opium are marked in their difference.

Dr. Anstie's first observations on this subject were as follows: He was a sufferer from temporal neuralgia, which yielded to the small (or stimulant) dose of opium. On several occasions when the attack was upon him, he was anxious to be rid of it speedily, and so took a heavy or narcotic dose of the drug, when he found that his pain was so increased that he was obliged to take his bed.

A repetition of this treatment with like effect, caused him to begin that course of studies on stimulants and narcotics which he embodied in his great work bearing that title.

I wish to present the general principle that all anæsthetics are stimulants, and all stimulants, if pushed far enough, are anæsthetics.

If this is true, the propriety of giving wine, brandy or whisky, immediately before administering ether or chloroform, may be gravely questioned; particularly if given with the idea of enabling the patient better to bear the anæsthetic proper. A more logical proceeding would be to give the brandy after the ether, that it might act like a stimulant after severe nervous exhaustion.

Turnbull enumerates thirty substances, which he says, are so volatile that they can be used for producing anæsthesia.

Practically known he only considers Chloroform, Ether, Nitrous Oxide, Hydrate of Chloral and Bromide of Ethyl.

His carefully tabulated statistics of deaths do not materially change the established ratio which has been accepted for the last ten years, viz:

Chloroform 1 death in 3,000 cases.

Ether 1 death in 30,000 cases.

Nitrous Oxide 1 death in 150,000 cases.

I have noted two deaths from Bromide of Ethyl.

I used it in my own practice in nearly one thousand cases, using it extensively for about 3 years.

It is a very pleasant and prompt anæsthetic in most cases. But in some cases the narcosis was almost instantaneous, and very profound. This together with the reported deaths induced me abandon its use. I am not yet sure from the reports of the causes of deaths whether the fault may not have been from the

impurity of the article used. I have not been able to find the reports.

The longest time I have kept a patient insensible with Bromide of Ethyl was 61 minutes.

The case was perineal section and the anæsthesia was perfect.

For the last two years I have used the Alcohol, Ether and Chloroform mixture "A. C. E." with uniformly good results.

If there is anything better I do not know of it.

A very good inhaler for Bromide of Ethyl, Chloroform or Ether is very readily made by punching two holes through the bottom of a common rubber plaster bowl, and drawing through them a piece of tape, with which to fasten a napkin in the bottom of the bowl, upon which the anæsthetic may be poured as the case requires. This inhaler has the advantages of cheapness, adaptability and indestructibility.

Those of you who have had a carefully made paper cone gripped by a nervous patient will appreciate the latter quality.

#### REPORT OF COMMITTEE ON LOCAL ANÆSTHESIA.

**DR. G. NEWKIRK:** Of local anæsthetics, I have experimented a great deal with the fluid extract of *Cannabis Indica*, and have found it as a general rule, very satisfactory; it is similar to other agents in its power to obtund sensitiveness of the dentine, when applied to a cavity it should be allowed to remain at least ten minutes in order to obtain any good results. It is effective to a slight distance and after the removal of a portion of decay must again be renewed, the effect seems to be superficial and this is the case with all safe local anæsthetics, including cocaine and aconite. In my practice the *Cannabis Indica* has given more satisfaction than any of the others. It should be as near the temperature of the body as possible, hence I warm it over a lamp or dip the bottle in lukewarm water before applying. Pain in the application generally results when the pellet of cotton with the *Cannabis Indica* is placed in the sensitive cavity in too cold a state. It is also advisable to dilute it: provided a good reliable article is obtained.

Another local anæsthetic which has attracted my attention is Eugenol, and by warming it until quite hot before applying I have in many cases, obtained excellent effects. In some cases

the effect is quite marked, in others the results are very unsatisfactory—indeed, this is the case, more or less with all anæsthetics—I am unable to state the reason of this fact, but believe it is either due to a variation in the structure of the teeth; or possibly the patient is mentally influenced, as I generally inform them that an application of the remedy will make the cavity painless.

But the very best anæsthetics with which I am familiar are, the rubber dam, hot air with or without remedies, sharp burs and excavators and the manner of using them. In using burs in the engine do not allow the instrument to get heated but give only short and frequent touches. Spoon-shaped excavators are preferable to square-cornered instruments.

The general subject of anæsthetics was discussed by:

DR. JOHNSTON, who said that the paper of Dr. Fitch treats largely with the discovery of the anæsthetic properties of ether and nitrous oxide and suggests Dr. Oliver Wendell Holmes' remark, when it was contemplated to erect a monument to the discoverer of ether, that both names be placed on the monument and that it be inscribed: "To Ether."

I do not use the Bromide of Ethyl because of its dangerous action, although from the standpoint of a patient I am pleased with it. The alcohol, chloroform and ether mixture I do not think a safe and proper combination because of the antagonism of the ingredients, the action of the alcohol and ether being the reverse of the action of chloroform, the latter's action upon the heart is too depressing; also, in the mixture by virtue of its specific gravity it does not properly mingle with the other components, and in addition to that, it should not be inhaled in the same proportion of mixture with air, as ether.

DR. TIBBETS said, in referring to local anæsthesia, I have often used internally a compound of

R Atropina Sulph. gr  $\frac{1}{16}$   
Morphina Sulph. gr  $\frac{1}{4}$

and have given it with good effect, in the above dose (?), the amount to be given is determined by the case in hand. In devitalizing pulps in those cases in which, by a reason of a low vitality, the arsenious acid generally used is not readily taken up, I employ arsenite of potash prepared for this purpose, as follows:

R    *Acidi Arsenici*    -    -    gr. x  
       *Hydrat. Kali*     -    -    gr. xij<sup>ss</sup>  
       *Cocain Mur.*      -    -    gr. ij<sup>ss</sup>

M.

Its application generally reduces pain immediately, and it very soon entirely ceases. In from 12 to 24 hours the pulp can be removed with comparative ease. If the preparation is allowed to remain from eight to ten days the pulp becomes soft, and with a common syringe or a hypodermic syringe for fine canals, the saponified mass of pulp can readily be washed out.

DR. MOODY: I have used *Cannabis Indica* for obtunding dentine extensively, and like it very much. In those in whom the effect is marked, it is generally very satisfactory. It can be used around the necks of teeth before using clamps, wedges or the rubber-dam, the fluid, however, should be warmed to the temperature of the body, otherwise it often causes pain.

DR. DAVIS: For local anæsthesia, I have found the rubber-dam, sharp burs not allowed to get heated, the most satisfactory. Have also used nitrous oxide and ether with good effect.

DR. MARRINER: My local anæsthesia is: dry tooth, hot air, sharp instruments properly handled.

DR. W. O. KULP (Davenport, Iowa): Does not believe the dose recommended by Dr. Tibbets, a safe one, and hence sounds a note of warning; believes that Dr. Marriner struck the keynote so far as local anæsthesia is concerned. Does not use obtundents much, and believes in obtaining the confidence of the patient, personal magnetism may be influential. In using cutting instruments, cut sharply and away from the pulp. In the removal of teeth has used with good effect as a local anæsthetic the following:

R    *Olei Caryophyll.*  
       *Olei Cinnamom.*  
       *Chloroformi, partes equales.*

M. Sig.    Apply with cotton upon the gums.

DR. NEWKIRK obtains good effects from the use of carbolic acid around the margin of the gums, or upon the gum before opening an abscess.

Subject passed.



## OHIO STATE DENTAL SOCIETY.

SECOND ANNUAL MEETING, TOLEDO, OCTOBER 26, 27 AND 28, 1886.

REPORTED BY W. H. WHITSLAR, M.D., D.D.S.

*(Continued from page 85.)*

THURSDAY, MORNING SESSION.

A paper on Operative Dentistry was read by Dr. J. A. Robinson, of Jackson, Mich., which elicited the following discussion :

DR. SIDDALL said : Dr. Robinson says "see what you are doing." He has found one of his eyes to be stronger than the other, and hence it is necessary to have an appropriate glass for each. He recommends the jeweler's single glass for operating.

DR. BUTLER said : Much has been said about the textile foil of Dr. Robinson, because it antagonized with amalgam, lessening thereby the amount of product. The use of this foil by some has resulted in failure, but it is the fault of the operator not the material. You have to put gold in position with great force and so it is with this foil. The blackening of the filling comes mainly from faulty manipulation. The more you use the better you will like it. "Dogmatically speaking," to use Dr. Harlan's expression, nine-tenths of the men don't pack the foil thoroughly.

DR. JENNINGS said the trouble was that the material is not consolidated properly.

DR. HARROUN said there is much in the manner of introducing the material. He has been in the habit of using a burnisher and rubbing the foil thoroughly around in the cavity.

DR. ROBINSON said there has been much questioning in regard to the metals that enter into the manufacture of the foil.

DR. FLAGG had some controversy about it and wrote a letter afterwards when he was satisfied that there was only the metals that he claimed and said, "Uncle Jerry, you are right and I was wrong." The material contains only tin, platinum and gold. Dr. Harlan is not fully pleased with it, because the fillings turn black. I love him all the more because of his candor in telling me plainly what he thinks of the material. I have used it a number of years, and only one person has come back with a failure in four years.

DR. CALLAHAN has used the fibrous foil five or six years with good results, and has been accustomed to adapt it by the Herbst

method; it makes it more compact. He believes that is the best way to use it.

Subject passed.

Next subject: "Obtundents for sensitive dentine, their value and modes of action."

No paper was presented. Dr. H. A. SMITH said: Dr. Harlan has made some experiments with the Herbst method of obtunding. I think it would be interesting to hear from him.

Dr. HARLAN said, as originally published, it was stated that it took only thirty grains of the hydrochlorate of cocaine to saturate two drachms of sulphuric acid. By experimenting it was found that it required more than seventy grains to saturate that quantity of chemically pure acid. He had allowed a tooth to remain a week in the solution without any effect upon the structure. Therefore there need be no fears entertained of the agent injuring the tooth. To obtund, it must be applied and re-applied to have the desired effect. In certain cases the superficial layers of decay can be removed without pain. In experiments by taking the *alkaloid* (crystals) ten grains to ninety minims of sulphuric ether, I found that it makes an obtundent which is better acting and more rapid than the original Herbst preparation. If applied to an exposed pulp and allowed to remain four or five minutes, the pulp can be removed with little pain. Ether is a refrigerant and does not affect a tooth injuriously.

Dr. SMITH inquired if the effect of the obtunder was upon the dental fibrillæ or nerve distribution of the pulp?

Dr. HARLAN answered: "I don't know."

Dr. H. A. SMITH said the question is whether the fibrillæ are true nerve fibers or mere protoplasm. When ether is applied to protoplasm it has a certain effect. Quain's Anatomy gives a complete description of acids and alkalies and their effects on protoplasm, which is very interesting. In the use of the obtunder the effect is superficial, and its manifestation is never in the fibrillæ, but in the odontoblastic layer—an efferent effect. Protoplasm has the property, when touched upon one side, to show the effect felt on the other side, by conductivity. (An enlarged drawing taken from Prof. Black's article in the American System of Dentistry was then shown to illustrate his remarks.) The pulp of a tooth has no tactile sense; it experiences only thermal

changes. Prof. Black says that a patient can not distinguish between hot or cold water when brought in contact with the pulp. Protoplasm is destroyed by sulphuric acid. The use of arsenic, when applied to sensitive dentine or for destroying the pulp, has always been mysterious to him. He believes it to be a kind of infiltration, so to speak, the arsenic impregnating the tissues.

Dr. BUTLER inquired if it were possible to have such action if *dry* arsenic is placed into a cavity?

Dr. H. A. SMITH replied, yes; that is one of the peculiarities that protoplasm has for hard substances.

Dr. TAFT said our knowledge of the action of obtundents is obscure. Any given material differs in different cases. Chloride of zinc, in some cases, gives pain, in others none; sometimes there is permanent death of the small portion of tissue, while as a rule it is affected only for a time. Essential oils do not destroy tissue to any great extent. The oil of cloves has little effect on the organic portion of the tooth. It is sedative and in some cases it has no effect. Dr. Herbst's obtunder has a different action. He cleans the cavity thoroughly. After application of the agent there is a white powder lining the interior of the cavity.

Dr. HARLAN (interrupting): Is not this powder crystals of cocaine?

Dr. TAFT replied, "no, sir." Cocaine helps to lessen the solvent power of the sulphuric acid. The effect on the living portions of the tooth is the same as the action of the acid anywhere on living tissue, it is escharotic.

Subject passed.

Dr. TALBOT, of Chicago, gave a clinic explaining the use of wire for regulating teeth. He prefaced the clinic by remarking that it is difficult to reduce the principles of regulating teeth to a fixed system. Formerly the wedge, screw, pulley, wheel, axle and elastics were much used. Dr. Coffin was the first to use wire for regulating. Many appliances are cumbersome and difficult to retain. The appliance should be small and so devised that it may be removed by the patient. Piano wire has advantages, but does not expand with uniform force. An indispensable point is to coil the wire, when you will get a uniform pressure. The mainspring of a watch exhibits the principle of the use of the

coiled piano wire for regulating. The wire must be drawn cold. Use sizes from 18 to 24, according to the age of the patient and case. The coil is made by driving a large needle into the bench and twisting the wire around it. Generally the first appliance can be worn a week. One spring answers for many cases. It requires study to know where to bore holes for placing the springs in the little rubber attachments next to the teeth. Accurate impressions should be taken of the teeth, and the points of rubber braces should extend between them to secure firmness. Sometimes it is necessary to fasten the wire to platinum bands around the teeth. If one tooth only has to be moved on one side then brace against two or three on the other side of the arch. If the arch is to be spread make bands to fit around the molars. A number of models with springs adapted were shown.

Dr. DORRANCE thinks it a good plan to have regulating plates made so that one is not required to attend it perpetually. Models should be free from varnish. Coat the cast with liquid silix and the plate needs but little finishing afterwards. With a No. 1 Kingsley spatula or finisher he trims the wax models and makes depressions, so that wire springs may not twist out of place easily.

Dr. KEELY exhibited drawings, models and apparatus for correcting irregularities, and gave the history of a number of cases treated by him. In answer to a question by Dr. Bell, he said it was not justifiable to extract a first bicuspid to allow a cuspid to come into place. The arch should be spread.

At this point the discussion became so general by the asking of questions about special cases that the reporter is unable to give a readable synopsis of the remarks of the numerous speakers. It was quite evident from the attention that was given to the remarks of Drs. Talbot and Keely that a deep interest is felt by many members of the Society in this subject, and their joint exhibitions and explanatory remarks were not the least enjoyable features of this successful annual meeting.



## CHICAGO DENTAL SOCIETY.

The regular monthly meeting of the Chicago Dental Society was held in the lecture room of the Chicago College of Dental Surgery, on Tuesday, Dec. 7. Meeting called to order at 7.30 p.m. by the President, Dr. F. H. Gardiner.

DR. C. H. WACHTER read a paper on "Oxychlorides and Oxyphosphates," a synopsis of which is as follows:

"There is a growing interest in the subject of plastic cements owing to the increasing dislike on the part of patients to the appearance of gold in the anterior teeth. None of the oxychlorides are stable filling materials; but for lining cavities, preventing decay, improving color, or supporting frail walls, etc., they are of much value. The failure of oxychloride is due to solution or disintegration, from the action of fluids of the mouth, attrition and shrinkage. Its setting depends upon its freshness, and it becomes of little value if kept long exposed to air and light." Several formulæ were given, showing the composition of different preparations, and also their method of manufacture. "In mixing, steel instruments should be avoided, as by contact chloride of iron is formed, and the fluid becomes worthless. Wood or bone spatulas give the best results."

"Oxyphosphate of zinc is composed of pyrophosphoric acid and zinc oxide, with occasional impurities, such as phosphate of sodium, oxide of alumina, cadmium, magnesium, antimony, iron, arsenic or silica. The best results are derived from freshly prepared materials, the powder being well calcined, and the fluid clear and limpid. If kept very long and occasionally exposed to the air, the powder absorbs moisture and deteriorates. The quick setting of any preparation is good evidence that it is fresh or in reasonably good condition; slow setting cements should be avoided.

"In choosing a good cement there are three tests. 1st, It should adhere firmly to the spatula when hardened; 2nd, Should not stick to the fingers when being moulded into pellets; 3rd, Should rebound when thrown on the floor (after having become nearly hard). In manipulating cements, the use of an oil pad for moistening instruments will be of much assistance. Fillings should be varnished, to prevent contact with moisture before hardening.

DR. W. G. STOWELL followed with a paper on "Gutta-percha and their Uses." The essayist prefaced his remarks with a short history of gutta-percha, and the methods of preparing it for dental purposes. It is used in the laboratory for base or trial plates, in the manufacture of artificial teeth. As a splint for fractures of the jaw it is of great service, and gives less trouble to both operator and patient in applying. Among the requisite qualities of a perfect filling material are adaptability, non-irritation, non-conduction, imperviousness and insolubility. Gutta-percha possesses all these qualities. In filling root canals, it should be used without heat, as it has a tendency to draw away from the walls upon cooling. The best results from gutta-percha as a filling material may be expected in the following cases: In cavities where there is no friction from mastication, capping exposed or nearly exposed pulps, in children's teeth, as a temporary filling during treatment, as a temporary filling for very sensitive teeth, filling root canals, and as a foundation in large crown cavities in molars (?). In its use for capping pulps it has many advantages over other materials, and not the least of these is its non-conducting property. For children's teeth it is so easily manipulated that the child need not be frightened with rubber dam, or tortured with a long operation. Even if necessary to refill, the child will not hesitate to return if proper methods have been pursued. As a temporary filling for sensitive teeth, its obtundent property is doubtless due to the presence of quicklime in the preparation.

The discussion was opened by Dr. Louis Ottofy, who said he was very much interested in both papers, and thought the essayists had gone to the very foundation of their subjects. He did not use oxychlorides, but confined himself to the use of oxyphosphates. Both oxychlorides and oxyphosphates are bad for root fillings, and they will readily disintegrate in mouths where the saliva is ropy. He perfectly agrees with the essayist in using gutta-percha for fillings in children's teeth.

DR. NEWKIRK referred to the manner of treating children. There should be perfect confidence from the beginning. Children should be handled gently, and as little pain caused as possible. In crown cavities with a considerable grinding surface, he used

cement, on the surface of which he incorporated a quantity of amalgam, thus offering a greater resistance to wear.

DR. AMES said he used oxyphosphate in a semi-fluid condition, cooling the slab on which it is mixed, in ice water, to give more time in working. He would like to be informed if this was wrong?

DR. CADY thought it necessary to have more than one preparation of cement in the office, one slow setting and the other quick setting, the slow for the setting of crowns, and the quick setting for fillings. He referred to a certain preparation that had been forced upon the profession during the last few months by peddlers leaving "sample on trial."

DR. BROPHY said it was an imposition to have things thrust upon the profession in this manner. Many young men had cause to rue having taken on trial certain goods. He thought oxyphosphates had almost entirely superseded the use of oxychlorides. They were especially useful in saucer-shaped cavities near the gum margins, and for temporary fillings in the teeth of pregnant women, where they should be used in paste form, so as to adhere. For filling children's teeth he thought any soft filling material could be advantageously employed. Gutta-percha fillings inserted by him thirteen years ago had been examined lately and found to be in good condition. He had found the ordinary pink gutta-percha to wear better than any other preparation. The cavity should be in an antiseptic condition.

DR. HARLAN said the use of oxychlorides and oxyphosphates of zinc in dentistry was often condemned because of their being used indiscriminately by dentists in the place of gold. Oxychloride should only be used in pulpless teeth; its use for filling roots was unscientific and unmechanical. As the essayist has already said, the material should never come in contact with steel, and the period of sweating should have passed before any metal filling is placed upon it. Copal-ether varnish should be used on the walls of the cavity before introducing the cement. Oxyphosphate, when used in living teeth, causes pain by the extraction of moisture from the tooth substance, therefore someone of the essential oils should be used to bathe the cavity to prevent this. Oxyphosphate is a stronger material than oxychloride, and is far preferable where large surfaces are to be



covered with gold. Oxychlorides have an advantage over oxyphosphates in lining pulpless teeth, by reason of their better color, as oxyphosphates are of an unequal translucency in different preparations. Oxychlorides may also aid in bleaching. For temporary fillings gutta-percha is the most trustworthy. Gutta-percha should be kept from the air by wrapping it in tinfoil. Great care should be exercised in heating it, as it may be very materially impaired by over-heating. In wedging teeth hydraulic gutta-percha produces very little pain.

DR. REID quoted a case showing the durability of gutta-percha.

DR. ALLPORT said he had a case on record of a patient in whose mouth was a gutta-percha filling that had been inserted thirty-two years ago. Gutta-percha is often handled too carelessly, and much depends upon the heating. In using oxyphosphates oiled writing paper aided the manipulation and insertion of the filling. A small piece of paper the size of the cavity is placed upon the cement, and by a rolling motion of the spatula the material is carried to its place. Of late he had been in the habit of using tinfoil in the place of gutta-percha at the cervical margins, and had occasionally incorporated Robinson's Fibrous Metal, with cements for filling crown cavities in children's teeth.

DR. RHEIN only uses oxyphosphate, and applies a solution of gutta-percha in chloroform before introducing it. He had found Dawson's to be the least irritating, and used it in a putty-like mass, dipping the burnisher in glycerine to prevent the cement adhering to it. He always applies the rubber-dam and believes in the use of gutta-percha as a root filling.

DR. STOWELL, in answer to Dr. Ottoby, stated that he bridged over an exposure with gutta-percha, and by first filling the sides of the cavity to prevent any change in form, is always able to make a satisfactory filling.

DR. NOYES said he thought it was feasible to cap an exposed pulp as stated if the undercuts are well filled with gold, but thought it better to use oxyphosphate. Important cases where the conducting properties of different materials are to be considered, together with the action of acids, one is liable to over-estimate the value of certain materials, from the fact that teeth may resist decay from change in the health of the patient, etc. Oxychloride leaks, or is porous, while gutta-percha, being plastic,



some little time after cooling may with a little force be condensed. Mechanical perfection is the great desideratum of gutta-percha as a filling. The aseptic condition of cavities or roots is essential. Cements may take up exudates from a wounded pulp, and may thus prove of some benefit in hastening the healing process. A little nodule of oxyphosphate may be used on the teeth when regulating to prevent bands from slipping. For an oil pad he uses his finger, over which the stopper of the oil bottle has been drawn.

DR. HARTT wipes out the cavity with alcohol, then uses an antiseptic varnish, afterwards using enough oxyphosphate to complete the filling without having allowed his fingers to touch the mass. He does not believe in molding cements into pellets.

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THE FIRST DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.—The anniversary meeting of the First District Dental Society of New York City, will occupy three days, January 17, 18 and 19, 1887. It will eclipse anything heretofore undertaken by the society. The programme as at present arranged will be somewhat as follows: Monday evening, January 17, at 8 P.M., the meeting will convene in the Masonic Temple, corner 23d St. and 6th Av. The President of the society, Dr. Wm. Carr, will deliver an address of welcome, to be responded to by Dr. J. Taft, Cincinnati, Ohio. The regular business will then be proceeded with. The clinics will be one of the principal features of the meeting. These will occupy all of Tuesday and Wednesday mornings and afternoons. The College of Dentistry have placed their infirmary at the disposal of the Society, and the clinics will be held there. There are to be forty operators, all men of note, and as far as possible originators and inventors of what they are to illustrate. Each operator will precede his clinic with a few explanatory remarks. Tuesday evening the meeting at the Masonic Temple will be continued, and on Wednesday evening the anniversary banquet will be held at Mazetti's, corner 49th St. and 6th Av. The Sturtevant House will be headquarters for visitors, the rates of which have been reduced to \$3 a day American, \$1 a day European plan. The society from assurances at hand expect to see 500 visiting brethren.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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## WILL IT COHERE?

We have received from Dr. A. G. Friedrichs of New Orleans, La., two samples of gold—the first being a strip about one and one-half inches long and one-quarter inch wide, of the thickness of No. 240 foil. This strip was composed originally of ten soft gold cylinders packed into a round hole in a vise, then annealed, afterwards hammered and passed through the rolling-mill. Apparently it was one coherent plate of gold. Before being packed each cylinder was wet with saliva. On heating it in a spirit flame the flat surfaces developed a number of blisters the entire length of the strip of gold. When punctured with a pointed instrument they collapsed, showing that either air or moisture still remained between the compressed cylinders, even after the application of the force used in packing them, the subsequent annealing and hammering, and the additional pressure of the rolling-mill. The second sample was an unannealed cylinder filling packed in the same manner in the same vise, the gold being moistened as before. In the presence of Drs. J. A. Dunn, Chas. H. Wachter, B. D. Wikoff, and J. G. Reid, we picked the filling to pieces, demonstrating that there was no cohesion between the cylinders or any of the sheets of gold entering into their composition, in any portion of the filling. Dr. Friedrichs in a letter dated December 20th 1886, says: "On page 84 of THE DENTAL REVIEW you make the following statement: 'You may take a half-dozen leaves of No. 4 soft gold (and I mean non-cohesive when I say soft) and subject them to pressure, even to hundred

of pounds, and when the pressure is removed do they cohere? Certainly not.' Enclosed you will find a nugget of gold which is made up of ten separate cylinders of No. 4 gold foil that have been dipped in saliva and compressed in a vise. It presents a somewhat solid appearance, and I think there is some cohesion. However, when annealed, you will find that it can be hammered and rolled without disturbing the mass to any great extent. I prepared this specimen in haste, but I think it will cohere sufficiently to convince you that if the particles of gold are brought in close contact that they will cohere. The enclosed strip is composed of a similar number of cylinders, treated as the above mentioned nugget was, and afterwards run through the rolling-mill." The method of cylinder filling is described elsewhere in this number of the *REVIEW*, and the reader is requested to peruse it carefully in order to discern the merits of the old time system of filling. In our judgment it is unnecessary for the cylinders to constitute a coherent mass, and the picking apart of the nugget forwarded by our correspondent proves that the particles do not cohere. We believe that it is a well-established fact that the manufacturers of soft or non-cohesive gold endeavor to destroy its cohesive property, and we know that the condensation of gases on the surface of a sheet of gold will prevent cohesion, unless the gases are driven off by heat. No one would think of trying to fill a cavity in a tooth with cohesive cylinders on the wedge principle, as they would be so sticky and unmanageable as to defeat the object in the outset of the operation. Those practitioners who fill teeth with non-cohesive cylinders, in the majority of cases produce better fillings than are made by the use of cohesive gold and the mallet, but large contour operations are better made, and will withstand the strain of daily use more satisfactorily than cylinder-made fillings. We do not refer to cavities in the crowns of teeth, or on the buccal or labial surfaces, but strictly contour work, such as may be indicated between any of the teeth, or operations for lengthening teeth, to prevent what may be called mechanical abrasion. We are not advocating any method of filling teeth, as we believe nearly all now before the profession have merit in them, but we do contend that gold will not cohere to gold with tenacity unless it be fresh, clean and recently annealed.

## CLAMPS AND LIGATURES.

Our attention has been called to the misuse of clamps and ligatures so often that we make no apology for offering a few suggestions in regard to the proper use of these aids in retaining the rubber in place. Many patients have suffered injury or discomfort at our hands, and in consequence thereof we throw out these words of caution. When the rubber dam is adjusted is not necessary to tie a ligature around each tooth, especially if the operator is only going to fill a crown cavity in a bicuspid or molar. In many cases the rubber will not slip from the position in which it is placed, when a proximal cavity is to be filled anywhere in the mouth. Clamps can be dispensed with very frequently by including a larger number of teeth when applying the dam. We have been present at public clinics and were much disappointed to see good operators adjust the rubber over perhaps, a cuspid and two bicuspids, when they intended to fill small cavities located between the bicuspids. Then they adjusted a strong bicuspid clamp and proceeded with the operation badly handicapped. In this class of cases the first molar and the two incisors might have been included, and a clamp would not have been necessary. All clamps, however perfect in their mechanical aspects, are more or less discomforting to a patient. Their use should be avoided whenever possible. A conical tooth in any portion of the mouth may be difficult to fill without their use, but such teeth are not numerous. Before applying the rubber dam, particles of food, tartar and other foreign matters, should first be removed with instruments or by syringing the mouth with tepid water, the ragged edges of cavities must be chiseled away to avoid cutting the rubber when adjusting it. We pass a waxed thread between the teeth to remove obstructions. The rubber ought to be washed, dried, and perfumed before using it. The holes may be punched or cut as preferred. When the central incisors are to be filled, at least eight holes should be made so that the first bicuspids may be included. This will greatly assist the operator by giving him plenty of room in which to operate, and the teeth can be seen with ease. Ligatures are unnecessary, as the edges of the rubber may be everted so that it will cling to the teeth. In many cases untempered binding wire, such as florists



use, may be passed between the teeth, and by letting the ends project, twist them, and this will take the place of a clamp, with less injury to the gums, and give just as good results. We recognize the usefulness of clamps, and their necessity in certain cases, but protest against their misuse. With reference to the use of ligatures of silk or linen, our advice is, use them sparingly, as many natural festoons have been injured by their misuse, and in some cases their symmetrical outline has been permanently destroyed.

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### ASEPTOL.

(ORTHOXYPHENYL-SULPHUROUS OR SOZOLIC ACID).

This new phenol is an oily liquid with an ethereal odor, feebly escharotic when applied to the mucous membrane, miscible in all proportions in water, and soluble in alcohol, fixed and volatile oils and glycerine. It may be given internally in larger doses than carbolic acid, without producing toxic effects. It is twelve times more powerful as an antiseptic than carbolic acid. "Sozolic Acid, in fact, besides being soluble in water, is described as combining perfectly with bases to form salts, and it is to its capability of saturating ammoniacal bases that its antiseptic action is attributed." The above seems to indicate that it would prevent nitric acid in the mouth, and if so, a two or three per cent. aqueous solution might be used with advantage as a mouth-wash. When it is applied to bruised or lacerated gums, it relieves the pain very quickly; injected into the antrum it destroys foul odors and cleanses the surfaces with great rapidity. Used as a spray for the throat or nose, it proves itself a valuable and efficient stimulant and disinfectant. No pain is produced when it is applied to an exposed pulp. It is valuable for the injection of fistulous abscesses wherever found, on account of its non-poisonous properties. Dentists will do well to experiment with this new candidate for favor.

## DOMESTIC CORRESPONDENCE.

## LETTER FROM NEW YORK.

FIRST DISTRICT DENTAL SOCIETY.

*To the Editor of the Dental Review :*

SIR — To-day, notwithstanding a blinding snow storm, the monthly clinic of the Society was crowded, but the attractions presented repaid every one who ventured out in the "blizzard."

The most important thing presented was a new engine mallet, the invention of Dr. W. Irving Thayer of Brooklyn. Every devotee of the mallet seeing this will at once desire to be the possessor of one. It is destined to become a formidable rival to every other one now in use. It is shaped and gives a stroke very much like, but superior to, the electric mallet and carries the same pluggers. The blow is as perfect as that produced by a hand mallet, and is secured by a trip-hammer device. Every one who saw the mallet had only the kindest words to say for it.

Dr. Evans of New York City, displayed some more improvements in the line of crown and bridge work, also an interesting device for introducing hot air into pulpless roots, viz. : a piece of silver with a thick bulb, to which is attached a thin, broach-like appendage. The silver bulb retains the heat for some time, and it will be found a very useful device for removing moisture from roots.

Dr. J. G. Morey of New York City, exhibited some recent improvements in his set of flexible root drills for the engine. These drills can not be too highly spoken of. They have reduced what was formerly hours of toil to a few moments of delicate and safe manipulation.

Dr. Dwinelle of New York City, had been furnished with samples of three new forms of gold to experiment with, and report upon, to the Society. That made by Mr. Steurer he praised very highly for its cohesive qualities and the exceedingly fine impressions it will take. The gold of Nuremburg he found crystalline but coarse, and somewhat difficult of manipulation, and not as good as the former; while the gold presented by Mr. Wilson he condemned as a gross fraud and imposition on the Society. The

gold was simply mixed with a solution of shellac, which, if annealed, (contrary to directions) would catch fire.

The meeting of the Society in the evening was, as usual, very well attended. The reading of the minutes of the special meeting held on November 19, produced a breeze in the Society, which threatened, before it ends, to become quite a gale.

At the special meeting held on November 19, Dr. Kingsley offered the following resolutions :

WHEREAS, Dentistry in America is practically an independent profession and not subordinate to any other ; and —

WHEREAS, All the greatest attainments in dental science have been reached through separate literary, educational, and scientific organization ; and —

WHEREAS, Dentists throughout the world look to their professional confrères in America for the further advancement of dental science ; therefore,

*Resolved*, That in the interests of dentistry as an independent profession, immediate steps be taken looking to the formation of an INTERNATIONAL DENTAL CONGRESS, to be held in this country, and to which every reputable dentist in the world shall be entitled to admission and to all its privileges.

*Resolved*, That a committee of ten be appointed by the President, whose duty shall be to co-operate with similar committees from other societies, for the purpose of establishing such a Congress at as early a date as arrangements can be made which will make such a congress a credit to the dental profession in America.

*Resolved*, That we respectfully recommend that every dental society in the world appoint a similar committee, and thus bring about harmonious relations and universal support.

Unfortunately this motion was found to be illegal as the meeting was called for the special object of listening to Dr. Kingsley's paper. The meeting to-night was requested to ratify these resolutions and thus give them the legal endorsement of the Society.

Dr. Frank Abbott in a most eloquent manner portrayed to the Society the folly of passing such resolutions. He besought them to consider well ere they put themselves in such a false and retrograding position. He was not opposed to the CONGRESS but to the most absurd statement that Dentistry was not a Specialty of Medicine. Too much time had been spent by many of the most eminent men in the profession to accomplish the recognition of our Specialty to have their labors wasted and set at naught by the passage of such ill devised resolutions. Dr. Weld took the same position on the subject.

Dr. Kingsley replied in his usual eloquent manner, endeavoring by his persuasive sophistry to sway the feelings of the mem-

bers to his views. The excitement became intense, when a motion to lay the matter of approval on the table until the next meeting, was adopted.

There will be some active wire-pulling in the meantime by both of these eminent men. For the benefit of the profession at large, it is to be hoped that Dr. Abbott's faction will carry the day. It seemed to be the general view that an amendment of the resolutions would be adopted, favoring the holding of an INTERNATIONAL DENTAL CONGRESS, but leaving out all the objectionable phrases against our mother, who has at length recognized her child.

[At the meeting held on January 5, 1887 the above resolutions were not adopted.—EDITOR.]

It had become quite late when Dr. E. L. Swartout of Utica, N. Y., read his paper on "The Preparation of Cavities and Filling with Crystal Gold." The paper contained one solitary new point of merit, the use of a camel's hair brush instead of the hot air syringe for emptying a cavity of debris! There was no time for discussing the paper, or undoubtedly the fallacious view of trimming away enamel, around approximal fillings, would have been fully dilated upon, as well as the advice to make deep and numerous adjacent pits for anchorage. The Doctor spoke of having used this method since 1855; fortunately we have progressed very much since then.

The meeting was closed by a short well written paper on "Rhythmic Character of Functional Activity in Teeth" by Dr. J. Edward Line of Rochester, N. Y. He illustrated the theories of Spencer and Tyndall, in reference to the rhythmic character of the movement of everything in creation, and proceeded to demonstrate, that in a like manner all the changes that occur in teeth, both in their formation and in their decay, were rhythmic in their nature. The paper was given the very closest attention and when printed in the regular transactions of the Society will be found very entertaining reading matter.

VERITAS.

NEW YORK, December 7th, 1886.

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*To the Editor of the Dental Review:*

SIR—I hail with delight the new born journalistic babe of the profession, and hope in time, like the fond mother, to love the last the best of all.



I would suggest that you devote a page or two to a *resume* of the "Thought of the Day," so that one who is "awfully busy" may know the "things worth knowing," without "going through everything."

The "goings on" in the west we are glad to know, and will reciprocate by telling you how "our boys" are getting on in Jersey. "The Central Dental Society of Northern New Jersey," is a live society, with headquarters in Newark, and the members are practitioners of that and adjacent towns. Its president, Dr. Luckey of Paterson, makes an excellent presiding officer, but its "aliveness" is very largely due to the chairman of the executive committee, Dr. Watkins of Montclair. At every meeting of the Society since he has been in that position, one or more excellent papers have been read, and the discussions upon the same have shown that thoughts upon dental subjects have reached a higher plane.

Dr. Barrett was the last of the great lights to appear before the society, and gave an excellent paper on the "The Elements of Success," covering the "whole earth" even the ground under the finger nails. He cited as factors to success, education, adaptability, labor, cleanliness, reading of all the magazines, (especially the *Independent Practitioner*), attendance upon dental meetings, etc., and discouraging any reliance upon genius, but having a thorough belief in the truth taught by the fable of "the tortoise and the hare."

Atkinson, grand old man that he is, is always in attendance upon the meetings of this Society, and takes an active part in the discussions. He believed the "Affections of the heart," were the great factors in dental success. Stockton, in his grandiloquent style, did not think that "affections of the heart" or reference to the "tortoise and the hare," had very much to do with dental success or failure. He said one might have the graces of a Lord Chesterfield, the elegance of a Roman and "know all the knowable," and yet if he did not good saving dental work, his patients would leave him and his operations would be failures.

Kingsley, bright and sparkling, said a man always portrays himself as the hero, and all the young men had to do was to behold a Barrett, as the true type of a successful dentist.

The next light to blaze before the Society is Dr. A. W. Har-

lan, who reads a paper on the evening of the 20th of January, 1887, at which time the First District Society of New York City, will be the guest of the Central, and a "big time" is expected.

"JERSEY."

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## FOREIGN CORRESPONDENCE.

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### LETTER FROM HONOLULU, H. I.

*To the Editor of the Dental Review:*

DEAR SIR—In reply to your letter of inquiry I am happy to make the following statements:

Some thirty-five years ago, Dr. J. Mott Smith, a man fully abreast of his profession, came from New York City to Honolulu, and established here his home and practice. He was and is a man of marked ability, and gave to his profession his best thought and effort. Hence, those families who were under his care, were early trained to give more attention and care to the preservation of their teeth than was usual at that time. His influence upon the old foreign families here is very marked, extending even to the third and fourth generation, very few of whom have had to resort to artificial substitutes. For this reason, from the time I first came here, more than seventeen years ago, I have had comparatively few calls upon my time and skill except for operations upon the natural teeth.

The native Hawaiians of to-day have more defective teeth than their ancestors. This, I think, is owing to their change in diet and habits. They rarely call for help, however, except for periostitis or alveolar abscess. Exposure of the pulp does not seem to trouble them. The Chinese, who are here in large numbers, have good teeth, and take excellent care of them, through cleanly habits, and also in having them filled. The Portuguese, who are next in numbers, have very poor teeth, and take little care of them, except to have them extracted when they become troublesome. The Norwegians have the worst teeth of all the various nationalities who crowd these small islands; like those last mentioned, they take almost no care of them.

Quacks and charlatans have many times burned over the field here, and will continue to do so till we have a dental law. Many of those living upon the other islands who can not regularly come to Honolulu, often think the poor dentistry of the traveling dentist better than no dentistry, and so reluctantly submit to his unskilled treatment.

Yours very sincerely,

J. M. WHITNEY, M.D., D.D.S.

HONOLULU, Dec. 15, 1886.

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#### DENTISTRY IN RUSSIA.

*To the Editor of the Dental Review:*

SIR—I would be very much pleased to reply more fully to your request in regard to the condition of dentistry in Russia, but believe the less said of it the better.

In Russia, dentistry as a profession is still in an embryonic state, and, presumably, it will be a long time before the status of affairs is much improved. The body of the profession is made up of Americans, these constituting about four-fifths of the number, the remainder are Germans (who came here as mechanics, and afterward established themselves as dentists), some Poles, a good many Jews, and a few Russians.

The qualifications necessary to entitle any person to establish himself in practice consist of, first, the possession of a certificate from a practicing dentist showing that the applicant has served two years as an apprentice; second, an examination in matters pertaining to dentistry, the standard, however, being a very low one, as the requirements hardly exceed the ability to extract teeth, and a few simple questions in anatomy.

A dental school has recently been established in St. Petersburg to prepare candidates for graduation, in which the principal branches, the practical ones, are but poorly organized, although the theoretical teaching is thorough. There is much room yet for advance and improvement in Russia, and we hope that a better day will soon dawn upon our country.

Yours very truly,

W. SCHIBBYE.

KIEV, RUSSIA, October 22nd, 1886.

## REVIEWS AND ABSTRACTS.

COMPENDIUM DER ZAHNHEILKUNDE, Zum Gebrauche für Studierende und Aerzte, von Jul. Parreidt, Zahnarzt am Chirurgisch-poliklinischen Institute der Universität in Leipzig. Octavo, pages 222. Leipzig: Ambr. Abel, 1886. (Chicago: W. T. Keener.)

This little hand-book of dentistry is, in its sphere, one of the best ever issued from the press. The volume is intended for the student and physician. A careful reading of it will enable either to obtain a good general fund of information relating to the rudiments of dental science. In the United States, however, its use could not be as general as in Germany; for it is but in the newest sections of our country that the physician is called upon to perform dental services of any kind. Almost every village and hamlet possesses a dentist, and the ready transit is such that almost all people are within comparatively easy distance of fair dental service. Such, however, is not the case in the German States, hence the greater value of the book to German readers.

In general make-up the work is creditable to the publisher, being of clear print and remarkably free from grammatical errors.

The work is divided into six chapters; treating of dental anatomy and physiology, anomalies, erosion and caries; diseases of the pulp, the periosteum, alveolar processes, maxillæ, and the mucous membranes; of filling, extraction, and also dental prosthesis; thus comprising the general field of dentistry.

In recommending treatment, it is up to the most recent results of our understanding of micro-organisms, and in that regard in advance of any dental work, excepting, perhaps, the recently issued "American System of Dentistry."

To German physicians and to students (who are not perfectly familiar with the English language) the work will prove of much value.



**EPITHELIOMA OF THE MOUTH.** By H. I. Ostrom, M. D. Cloth, pp. 120. New York: A. L. Chatterton Co., 1885. W. T. Keener, Chicago.

This little volume, which "Is the outgrowth of a series of investigations, entered into in the course of professional study, for the purpose of elucidating to the author, some obscure points in the pathology, etiology and treatment of epithelioma of the mouth. Originally designed for personal use only, the notes made, early assumed the character of a study of the subject, which, in accordance with urgent requests, is now presented to the profession," and is marred by such typographical errors as "riticulum, nuceoli, epithelial, ethiology, submaxiliary, paroted, septicaimia," etc., which have no place in a scientific work, and which can under no circumstances be excused, especially when they appear in numbers of more than one to every ten small pages of reading matter.

The volume is divided into two chapters. The first chapter deals with the "Epithelium of the Mouth," and is a clear, concise description of that tissue.

The second chapter deals with "Epithelioma of the Mouth." It is to be regretted that the author has not added the slightest information as to the etiology of this obscure disease. His treatment of that subject is commonplace, but, on the whole, very thorough and concise. One very commendable feature of the treatise is the hearty approval of the author of surgical treatment, in nearly all cases of epithelioma, as soon as the malignancy of the disease is fully determined. Very little reliance can be laid on medical treatment of any kind, and the knife is very appropriately recommended to be used before the progress of the disease is marked. In that surgical treatment, however, the author has neglected to recommend the use of the surgical engine, which, in the removal of either the whole or part of the upper or lower maxilla, is certainly a most efficient appliance.

To the busy practitioner this little volume, by reason of its brevity, may prove very useful, for the dentist should at least be able to recognize this grave condition when it occurs in the mouth.

## LEGAL STATUS OF DENTISTS.

We clip the following from the Medical Record, October 23d, 1886.

"We have said that, until lately, only these two classes of physicians and surgeons were known to the law; but within the past ten years a body of men, whose business it is to treat a particular region of the human body, have been incorporated on the model of the medical societies, although, in so far as they claim to constitute a profession they can differentiate themselves from other ministers to human infirmity, not by their method of treating the ailments of man but by the part of his body they treat. They are the men who laugh in our teeth if in pain we go to them for aid. They are dentists, and call themselves oral surgeons. Granting their associations all respect due to the undoubted talent, skill, and acquirements of their members, it is, nevertheless, glossologically undeniable that, only in so far as they deserve the name of 'tooth-carpenters,' do the dentists form a class apart; in other words, it is only as mechanics, pullers, fillers, and, if one may so speak, falsifiers of teeth, that they are entitled to classification as a distinct body of workers. Plumbers, carpenters, ivory-workers, and dentists, in so far as they are a sub-species of the group last named, constitute, respectively, separate classes of artisans, differentiated *inter se* by the matter upon which their manual labor is performed, and the method and object of their work. So chiropodists, manicures, and barbers, while confining themselves to their proper function, constitute distinct classes of manual workers. But when the dentists, ceasing to be mechanics, undertake the treatment of diseases of the mouth, they become practitioners of medicine or surgery, and as such have no more claim to legal recognition as a peculiar profession than have dermatologists, gynecologists, laryngologists, or any of the other 'ologists who fill our ever-increasing space in the ranks of busy life, notwithstanding Mr. Worcester's obstinate refusal to admit them to standing-room in his logical and prejudiced dictionary."

? ? ?

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—A female patient, 27 years of age, has been suffering pain extending about the teeth and jaws generally, for about six months ; there are no decayed teeth, no inflammation is noticeable anywhere. One of the superior molars was filled a year ago, the pulp-chamber and root-canals having been filled with a solution of gutta-percha in chloroform. The tooth was extracted to-day and found in a perfectly healthy state, the root canals having been filled to the apex, all signs of inflammation were absent. Both inferior third molars, and the right superior, are in position. There are no indications of the probable eruption of the other one. Pain is especially severe in the lower lip over the chin. The general health of the patient is good.

She is almost determined to have the teeth extracted, but I wish to prevent it if possible. Her physician thinks the trouble originates from the teeth, but a careful and thorough examination does not reveal the cause. Can you give me any advice? She has promised to wait until I hear from you before sacrificing the remaining teeth.

Respectfully,

JAMES W. CORMANY.

MT. CARROLL, ILL., Dec. 16, 1886.

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—Will some one be kind enough to tell how to regulate a south light in the operating room, so that it will give the best light without injury to the eyes, etc., and oblige.

Yours truly,

JAMES W. CORMANY.

MOUNT CARROLL, ILL.

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—I wish some advice about the treatment of the antrum. I have a case where an abscess from the second bicuspid discharged into the antrum, and after the extraction of the root, pus continues to flow from the opening. What treatment should be adopted?

D. D. S. MEADVILLE, Pa.

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—One of your correspondents asks some advice about the treatment of blind alveolar abscesses, referring, doubtless, to those in a quiescent chronic condition, discharging pus through the pulp canals of the teeth. He says, " Whenever I try to treat a case of this character it almost invariably results in a swelled face for my patient." That is to say, the *chronic* abscess immediately becomes *acute*.

This very unpleasant result may not be unavoidable in every case, practically, but in most of them it can be prevented. The requirements are : to avoid stopping the free drainage of the abscess through the pulp canal, and to avoid pushing a particle of the septic contents of the pulp canal through the foramen into the abscess cavity, or, if the abscess is entered at all it must be done freely, and so

thoroughly cleansed and filled with some non-irritant antiseptic as to prevent it from being poisoned. The foramina are usually too small to admit of carrying out the latter plan without enlarging them by drilling, and if access to an abscess is to be obtained by such means it would better be through the gum and alveolus. Many canals are so fine that they can not be entered at all without having some portion of their septic contents forced through their foramina by the piston-like action of the probe, and must therefore be first rendered aseptic, if possible, by dressings in the pulp chamber for a few days before attempting to cleanse them thoroughly. The dressings must, of course, be placed loosely enough to avoid stopping the drainage from the abscess, and must therefore be very frequently changed, not being perfectly protected from dilution by the fluids of the mouth. As soon as the canals have been well cleaned out the dressing may be shut in more tightly, but with opportunity, and careful directions, for its prompt removal at the first appearance of soreness, feeling of fulness, or any of the early symptoms of acute inflammation. If the dressing has to be removed suction with the tongue will often greatly assist and hasten the relief by re-establishing the discharge. The dressing should be renewed soon enough to prevent the canal from again becoming infected. The antiseptics and disinfectants used should be non-escharotic, and not too irritating. Carbolic acid, creosote, and iodine, chloride of zinc, etc., should be strictly avoided unless so much diluted as to render them entirely free from escharotic properties. Eugenol, oil of cloves, eucalyptol, sanitas fluid, and a considerable number of others, may be used with great satisfaction, and the bichloride of mercury, about one part in five hundred or one in one thousand, is especially useful in cleansing the pulp canals. Most blind abscesses will get well *in time*, with no other treatment than the persistent maintenance of an aseptic condition in the pulp canals.

The objections to the use of escharotics are that they usually stop the drainage of the abscess by causing a coagulum in the foramen or root canal, or else provoke acute inflammation by their irritant qualities. N.

CHICAGO, ILL.

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## MEMORANDA.

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From the statistics published in the December number of the REVIEW we believe that there is a good opening in Strasburg for an American dentist.

Dr. W. F. Calhoun, an Illinois dentist, has been elected speaker of the House of Representatives. Dr. Calhoun has for several years represented his district in the Legislature.

A correspondent informs us that a good dentist would find an excellent opening in Lima, Peru. A convenient route would be to go to New Orleans, sail to Panama and take a West Coast steamer thence to Callao.

Dr. W. W. H. Thackston of Farmville, Va., President of the Southern Dental Association and the oldest living graduate of the oldest Dental College in the world, promptly sent in his subscription to the REVIEW. Long may he wave.



NORTHERN ILLINOIS DENTAL SOCIETY.—President, A. B. Elmer, Rochelle; Vice-President, Dr. Kennedy, Morrison; Secretary, O. H. Smith, Sycamore; Treasurer, W. C. Bunker, Oregon. Next meeting will be held at Rockford, Ill., February 16th, 1887.

§ 9. *Dentist*.—You can not properly acquire the knowledge of dentistry which you require from books. You will find in recent numbers of *The Chemist and Druggist* advertisements from mechanical dentists who will teach you and put you in the way of doing the business.—*Chemist and Druggist*.

The first regular meeting of the Eastern Illinois Dental Society, will be held in Paris, Ill., on the third Tuesday of March, 1887. Officers: President, C. R. Dwight, Danville; Vice-President, G. O. Shafer, Champaign; Secretary, E. W. Sheriff, Danville. All dentists residing in the district are invited to join the society. Visitors will be welcome.

An editorial which appeared in the *Review* on "Motors for the Dental Engine" some time since, seems to have had its effect; as we are in communication with an inventor who promises to furnish us with a motor, the power of which is transmitted by "heated air." We hail with pleasure a new assistant, hoping all the requirements in a machine of this character will meet our every-day needs.

The Southern Illinois Dental Society, will meet in Duquoin, Ill., on the first Tuesday in April, 1887. Officers, C. B. Rohland, Pres.; T. W. Pritchett, Vice-Pres.; G. W. Entsminger, Sec.; N. W. Carter, Treas.; Executive Committee, J. J. Jennelle, J. G. Dixon and E. L. Spencer. All dentists not members of this society residing in the district, are invited to be present and join the organization.

Dr. W. H. Atkinson has issued a "Correspondence Circular" asking replies to questions on caries, oral pathology and therapeutics, filling materials, matrices, methods of crowning, correction of irregularities of teeth, anæsthetics, local and general, and other queries which, if generally answered, will make a very valuable paper for presentation at the next meeting of the Dental Society of the State of New York.

Governor R. J. Oglesby, in his annual message, recommends that appropriations be made from the State Treasury, for the maintenance of the State Board of Pharmacy and the State Board of Dental Examiners, in order to place them on an equal footing with the State Board of Health, the Commissioners of Charities, etc. We think the recommendation should be acted upon, so that the provisions of these Acts may be carried out in the spirit of their intent.

The Council of the Royal College of Surgeons, England, will hereafter accept eighteen months of the required three years in mechanical dentistry, if the time has been spent prior to registration as a dental student. Heretofore three years instruction as an apprentice to a registered dentist was required in addition to the four years exacted before the candidate could come forward for the L. D. S. This is quite a concession to dentistry from this august body, and we notice that all our British exchanges are felicitating over it.

The annual meeting of the Louisiana State Dental Association, will be held in Tulane Hall, at New Orleans, La., on the 23d, 24th and 25th of February, 1887. A

cordial invitation is extended to the members of the profession throughout the States to attend. No efforts will be spared to make our guests welcome and comfortable, and the meeting interesting and profitable. An opportunity to witness the Mardi-Gras festivities will be afforded those who come, also favorable railroad rates may be had at that time. The Mardi-Gras celebration takes place a day before the meeting. For further information address P. J. FRIEDRICH, Chn. Ex. Com., 155 Carondelet St., New Orleans, La.

The Chicago Dental Society gave a banquet (the sixth) at the Hotel Richelieu Tuesday evening, December 14th. It was a very enjoyable occasion. About fifty gentlemen were present including visitors. Dr. Frank H. Gardiner, the President of the Society, presided. Drs. C. S. Case, of Jackson, Mich., A. O. Hunt, of Iowa City, D. J. Pollock formerly of Sterling, Ill., and W. B. Knapp, of Ft. Wayne, Ind., Rev. Henry G. Perry of Chicago, A. W. Gray and C. H. Ludwig and others graced the occasion, in spite of the snow storm which struck our city on the above date. A number of informal toasts were responded to by the younger members of the Society and every one present went home, believing in a prosperous future for the pioneer organization of dentistry in the Garden City.

Dentistiana. One of our colleagues, M. T., was going to the dental school to give a clinic and took a seat on the top of an omnibus. A short while afterwards a distinguished looking gentleman took a seat beside him, and very shortly began to speak of his daily occupation, the teeth interested him greatly; he spoke on dental hygiene particularly, and our *compère* listened with surprise and pleasure to the remarks of his neighbor, who seemed so deeply interested in buccal hygiene. Then the gentleman, before quitting his seat, descanted on his qualifications as a dentist, and, departing, handed his card to M. T., who accepted it with thanks. On looking at it, it bore the name of a well-known practitioner on the Rue Saint Honoré! How is this for enterprise on the top of an omnibus?—*L'Odontologie*.

ILLINOIS STATE DENTAL SOCIETY.—The State Dental Society will meet in Jacksonville, Ill., the second Tuesday in May, 1887. We hope it is not too early for the Executive Committee to begin active work looking towards a successful annual gathering. The programme for essayists and clinical operators should be so well filled that the whole four days usually allotted for the sessions will be consumed in scientific or practical work. The ordinary routine of creating committees and amending the constitution and by-laws should, if possible, be completed the morning of the first day, so that time will not be frittered away by amateur legislators, whose only apparent object is usually to obstruct—not facilitate business. In this connection the members will do well to remember that the committee appointed to revise the constitution inserted their report in the last volume of the transactions.

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Three conspicuous examples may be given—Paris, 1867; Vienna, 1873; Paris, 1878. At the first Paris Exposition Universelle in 1867 a Gold Medal was awarded to Samuel S. White. No other manufacturer of porcelain teeth was similarly honored. At Vienna, Gold, Silver and Bronze Medals was conferred to distinguish degrees of merit; but above and beyond even the Gold Medal was the Grand Diploma of Honor, which was conferred as the "peculiar distinction of eminent merits." Of the hundreds of individual exhibits from the United States only four were esteemed worthy of this "peculiar distinction." Medals, especially those of Bronze, were lavishly bestowed. The Grand Diploma of Honor, the "only really valuable distinction," was awarded to Samuel S. White. It seems necessary, even at this date, to repeat the statement that the highest award received by any other manufacturer of Porcelain Teeth was a Bronze Medal. At the Paris Exposition of 1878, graded Medals were conferred. In the department of Dentistry four medals were granted to exhibitors from the United States. Three of these were of Bronze and were received by our competitors; the fourth was of Gold and was presented to Samuel S. White.

In the light of the foregoing facts a Bronze Medal would seem to have small claim to the honor of "First Medal" or "Highest Award" at either the Vienna Exposition or the Paris Exposition of 1878.

Most of the World's Fairs, beside those already mentioned, conferred but no medal on all alike whose exhibits were deemed worthy of award, relative merit being indicated, if at all, by discriminating reports of the Judges. The American Centennial, Philadelphia, 1876, is a type of these.

The announcement by an exhibitor that he received the "First Medal" at the Centennial is evidence either of misapprehension of the system of awards or of willful intention to mislead. Every medal conferred was of bronze. The highest award could only be determined by comparing the Judges' Reports on the various exhibits. In proof of our claim that we received the highest award, we submit a copy of the Official Report on our exhibit:

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Signed,

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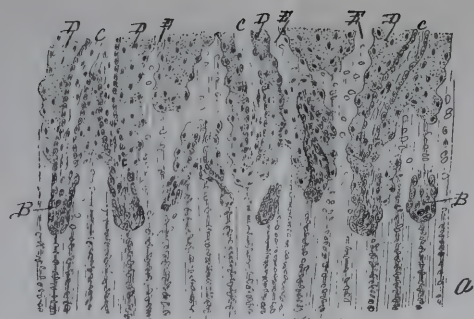


Fig. 29.

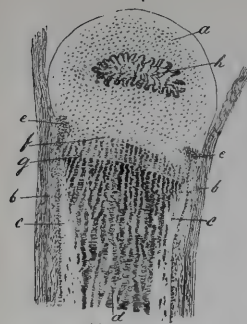


Fig. 32.

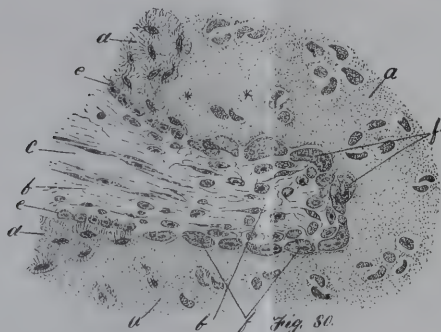


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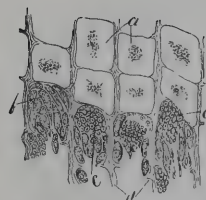


Fig. 34.

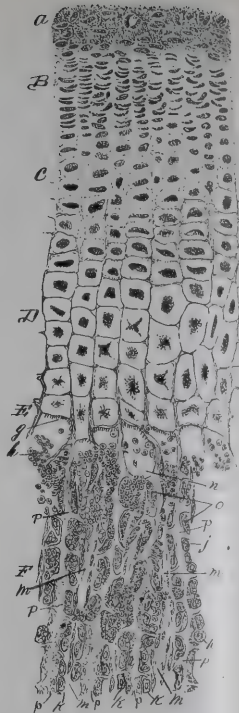


Fig. 33.

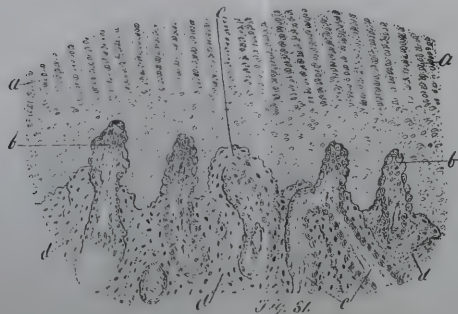


Fig. 31.

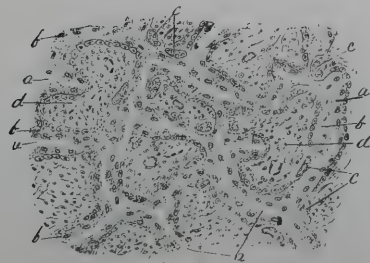


Fig. 35.



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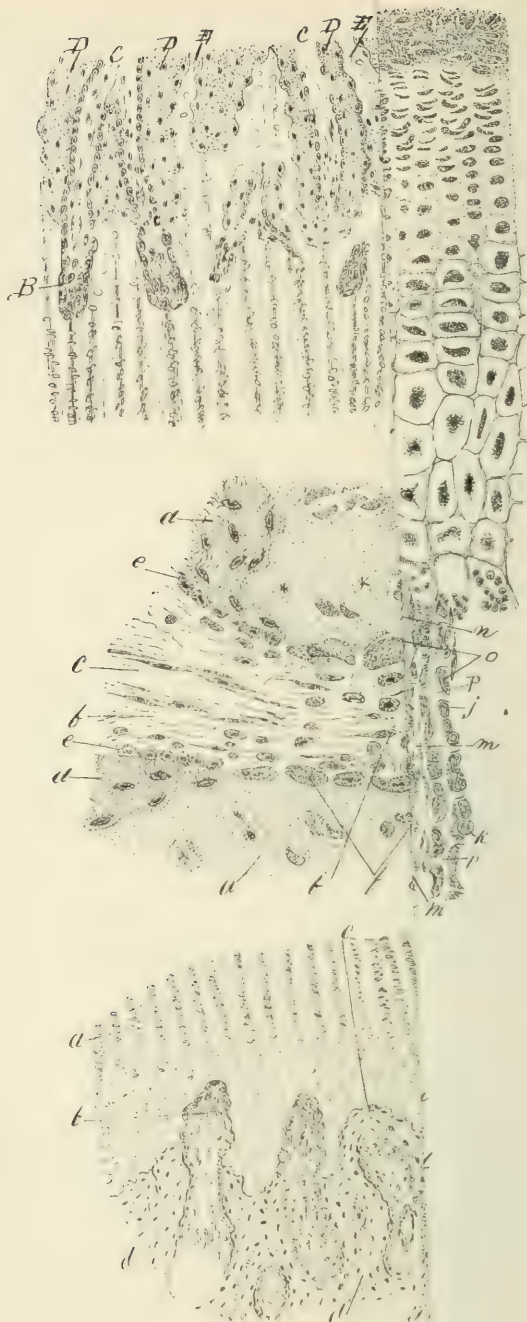
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# THE DENTAL REVIEW.

VOL. I.

CHICAGO, FEBRUARY 15, 1887.

No. 4.

## ORIGINAL COMMUNICATIONS.

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### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

By G. V. BLACK, M.D., D.D.S.,

Professor of Pathology in the Chicago College of Dental Surgery.

(Continued from Page 127.)

#### DESCRIPTION OF ILLUSTRATIONS.

Fig. 29, 1-4 in. obj. Growth of bone under the attachment of the Tendo Achillis in a young lamb. *A*, Fibers of tendon partially converted into fibro-cartilage. The cartilage cells are seen mostly between the tendon fibers. *B, B*, and *c, c, c*. Canals advancing from the bone beneath into the tendon. *D, D, D*, Bone deposited upon the walls of the canals forming Haversian systems laid upon, or among the tendon fibers. *E*, Portions of the tendon fibers still remaining deep among the Haversian systems of bone.

Fig. 31, 1-4 in. obj. Epiphysal intra-cartilaginous formation of bone from head of tibia of young lamb. *a, a*, Cartilage, the cells of which have fallen into rows, but have become scattered between the letters *a*, and *b, b, b, b*. Haversian canals advanced from the bone into the cartilage. It should be noted that these are lined with chondroclasts when the absorption of cartilage is in progress, and with osteoblasts when bone is being deposited. *C*, Blood vessels. *d, d, d*, Bone, which is extended into the cartilage by the filling of the canals formed by absorption as shown at *e*.

Fig. 30, 12th in. immersion obj.—reduced. *A*, Single canal as shown at *b*, fig. 31, very much enlarged. *a, a*, Cartilage. *b, b*, Tissue of canal. *c*, Blood vessel. *d, d*, Bone. *e, e*, Osteoblasts. *f, f*, Chondroclasts. In both these figures the bay-like excavations of the absorption cells are seen in the canals, and at the margins of the bone deposited in these.

Fig. 32. Low power. Central section of the head, and portion of the shaft of the tibia from young kitten, showing diaphysal intra-cartilaginous formation of bone at *d*, and the beginning of the epiphysal at *h*. *a*, Cartilaginous head of bone. *b, b*, Periosteum. *c, c*, Layer of subperiosteal bone. *e*, Periosteal notch; the point to which the subperiosteal formation of bone extends. *f*, Be-

ginning of change in the cartilage cells where they form rows. *g*, Line of absorption of the cartilage. At *d*, the darkened portion reaching up to the line *g*, shows the portion occupied by the bone marrow, and the light portions the bone formed.

Fig 33, 1-8 in. obj. The changes which occur in diaphysal intra-cartilaginous formation of bone. *a*, Cartilage unchanged. At *B*, the cells have become smaller and have fallen into rows. At *C*, the cells are enlarged in their short diameters, or in the direction of the length of the shaft of the bone. At *D*, the growth of the cells has reached its limit. The matrix begins to calcify. At *E*, the capsules of the cells are opened by the advance of the absorbent tissue. *F*, Area of the formation of bone. *g*, Apparently some glutinous remains of the cell body clinging to the walls of the capsule. *h*, Small, round cells—marrow cells. *p, p, p*, Remains of the cartilage matrix. *j*, Osteoblasts applied to the remains of cartilage matrix, but no bone is seen. *K, K, K*, Osteoblasts and a layer of bone deposited on the remains of cartilage matrix. *m, m, m, m*, Blood vessels. *n*, Capsule which seems to have been just opened and the marrow cells seen in the act of crowding into it. *o*, Fusiform cells. Many of these appear in this portion of the figure, and seem peculiar to this location.

Fig. 34. Supplement to fig. 33, taken from another portion of the section and showing the marrow cells applied closely to the walls of the capsules next to be opened. *a*, Cartilage. *b*, Fusiform cells filling closely the last capsule opened in that row. *c, c*, Round, marrow cells filling other capsules in the same manner. *d*, Unabsorbed remains of cartilage matrix.

Fig. 35, 1-8 in. obj. From a cross section of a rib of a young kitten at a little distance (boneward) from the change from cartilage to bone, showing the large Haversian canals with the remains of the cartilage matrix enveloped in the bone formed. *a, a, a, a*, Remains of cartilage matrix which, in the figures, is left white. *b, b, b, b*, Bone deposited on remains of cartilage matrix, and generally covered with osteoblasts, but at *c, c, c, c*, and other points, osteoclasts are quite plentifully distributed. While in one part bone is being deposited, in another it is being removed, and in the end all of the cartilage matrix disappears.

#### GROWTH OF BONE UNDER TENDINOUS ATTACHMENTS—INTRA-CARTILAGINOUS FORMATION OF BONE.

As we have seen, in the more rigidly attached forms of the periosteum, where the fibers are very thickly set, the growth of bone is so modified that there is no formation of Haversian canals by the growth of spiculæ and arching over, but the bone is deposited in a solid surface and afterwards burrowed out for the formation of these canals. This kind of fibrous investment of the surface of the bone is the limit at which osteoblasts appear on the growing surface. At the points of attachment of tendons and strong fibrous bursæ, no osteoblasts appear on the surface of the bone, and its extension by growth under these conditions is effected upon a different plan. This is accomplished by the projection of Haversian canals, from the bone beneath into the

tendon, dissolving a portion of the substance of this, and depositing Haversian bone on the walls of these canals.

I present in fig. 29 an illustration of this process as seen at the attachment of Tendo Achillis. The section is cut from a young lamb lengthwise of the tendon fibers. The large fibers of the tendon are represented at *A*. For a little space in advance of the bony formation these are partially converted into fibro-cartilage, and the cartilage cells are shown mostly between them. The fibers of the tendon are, however, easily separated with needles down very close to the new bone. Indeed, although the cells appear as shown in the illustration, the tendon does not otherwise appear to be cartilaginous.

At *B*, Haversian canals, or at least capillary loops, grow out from the bone beneath and penetrate the fibers, removing their substance. A number of these are seen in the figure. This growth presents absorption-cells similar to those met with in the absorption of bone, but they do not seem to attain so large a size, and react differently to staining agents, which seems to indicate that there is some chemical difference between them. Indeed, I have found some difficulty in so staining these cells as to differentiate them clearly. They may be made out, however, by high powers, if the sections are sufficiently thin, without staining. With these absorption-cells many embryonal elements are associated, in such a manner as to very effectually obscure them if there is much thickness. After this process of absorption has proceeded for a certain space, in advance of the surface of the bone, the processes going on within the new canals are changed. Osteoblasts take the place of the absorption-cells, and bone is laid down upon the walls of the excavation. This is shown at *D*, *D*, while *c*, *c*, *c*, show the Haversian canals. These are older portions of the Haversian canals, and it will be noted that the bone is formed upon or laid against the tendon fibers, which here are more or less calcified, or infiltrated with lime salts. Everywhere along the sides of these formations of bone will be seen the bay-like forms due to the absorbent-cells. The growth is composed entirely of Haversian bone. The penetration of the tendon by the individual canals is not always in the line of its fibers. Though in a general sense it is so, canals are often seen to diverge very considerably from this

line. In the examination of sections *in extenso*, it is found that these canals branch in various directions into the tendon, and that new canals are formed very frequently by the absorbents piercing the sides of the Haversian systems formed, and starting out in new directions.

It will be noticed that there is always a very large portion of the fibers of the tendon left attached to the formed bone. Were it otherwise, the strength of the attachment of the tendon might be seriously impaired. Really many of the fibers continue to penetrate deeply among the Haversian systems, as seen at *E*. These are finally removed by the formation of new Haversian canals, by which the bone soon becomes very much cancellated, though we may find occasional isolated patches deep in the formed bone.

The conversion of the articular cartilages into bone, during the lengthening of the shaft, is a process almost precisely similar to that just described, so far as the absorption and removal of the cartilage, and the deposit of the new bone is concerned. There is, however, a marked change in the cartilage, which appears to be a preparation of it for removal and the formation of bone. I should state here, however, that there are two quite distinct modes in the replacement of cartilage by bone, the one taking place in the articular cartilages of the long bones, and probably in the whole of the short bones, while the other is confined to the shafts of the tubular bones. I do not wish to confound these two forms of the process, as has so frequently been done in our past literature.

I present an illustration from the tibia of a kitten, representing the position of these two forms soon after the beginning of the process in the epiphysis, fig. 32. The process of ossification has begun in the diaphysis early in fetal life, and is far advanced before the beginning is made in the epiphysis. The subperiosteal growth of bone is begun before the beginning of the intra-cartilaginous, and continually precedes it. *c, c*, Represent the subperiosteal deposit, the advance of which terminates in the periosteal notch *e, e*. It will be noted that a thin layer of subperiosteal bone passes up to this notch. *f*, Marks the beginning of change in the cartilage cells represented in fig. 33, and *g*, the line of the absorption of the cartilage and the point of the dia-



physal intra-cartilaginous formation of bone. The darkened portions *d*, represent the bone marrow, and the light portions the bone formed, which latter occupies but a small part of the area. At *a*, the cartilaginous head of the bone is seen, with the beginning of the process of epiphysal ossification at *h*.

The changes in the epiphysal cartilages will appear somewhat differently in the same animal at different ages. In following up the examination of sections, cut through the center of the head of the tibia, for instance, beginning with the surface of the articular cartilage, this will be found to consist almost entirely of fine white fibers (fibrous tissue), arranged perpendicular to the surface, and lying very compactly together. A little inward from the surface very small cells come into view, and if the section be sufficiently thin it will be noted that these lie between the fibers. Still proceeding inward, the cells become larger, and the fibers more indistinct. In many instances the fibers seem to gather into groups or bundles, and terminate; in others, they simply fade away into the cartilage. Farther inward, nothing but the clear ground substance of the cartilage, studded with its cells, is seen. These cells are small at first and single, but they grow larger, and soon we find two together, and finally three or four, and perhaps more, that seem to occupy a single capsule.

At this point a great variety of appearances may be found in the examination of the changes as they occur in animals at different ages. In fig. 31, I present an illustration from the head of the tibia of a lamb about two months old, which shows these cells as flattened and in distinct rows. In this case the change of the cartilage to bone is well advanced. If it had been examined at an earlier age, especially before the junction of the diaphysal with the epiphysal bone formation, these rows of cells would not have been found, but instead the enlargement of the cells would have been found proceeding regularly, while they remain scattered without order, i. e., without falling into rows. Although I have not seen the actual division of cells, and know of no one who claims to have done so, there can be no reasonable doubt that we have been following the active results of growth, not only of the individual cells, but of the multiplication of the cellular elements by division. After passing inward from this formation of rows, it is found that this arrangement is lost, and

the cells are again scattered over the field without order of arrangement, as shown in the figure, and that the space between them has become much greater. At this point the cartilage becomes infiltrated with lime salts, and all activity within it ceases. This statement should, however, be qualified, in so far as to say that in the younger articular cartilages, when the process of change is just beginning, only the matrix becomes calcified, the cells remaining soft; but in such as that from which our illustration was taken, the cell bodies are also calcified.

The process of absorption of the cartilage is begun by the perforation to its center of one or more canals. These then spread out for a considerable space, showing at first no disposition to the formation of bone. The cartilage is absorbed, and replaced by tissue of a primitive fetal type. Soon, however, short canals begin to radiate from this central cavity, and after proceeding for a space, the process of absorption ceases. Osteoblasts then develop along the walls of the space opened, and begin to lay down bone upon the cartilage. While this is in progress, new canals are being opened at other points, which in succession receive deposits of bone upon their walls. In this process the new bone is laid directly upon the cartilage, and in the successive burrowings, very nearly all of the cartilage is removed, but often a small remainder will be found at some distance from the margin where the absorption is in progress, in the central part, perhaps, of some portion of the newly formed bone. However, the first bone laid down is usually removed by absorption after a time, so that, in the end, all of the cartilage is absorbed. Indeed, at first—that is, in very young animals—when the absorption of the cartilage is still confined to its central parts, the Haversian canals formed remain very large, only a thin stratum of bone being deposited upon their walls. At a more advanced age, the deposit of bone is greater, though at all times it remains quite cancellous.

During the earlier period of absorption the cells of the cartilage remain soft, and the effect of this condition influences the absorptive process, for as soon as the wall of one of these is opened the cell body seems to escape, at least it disappears, and its place is occupied by fetal tissue of the same type as that which fills the Haversian canals in the immediate neighborhood.

There has been much speculation as to the destiny of the cartilage cells, some supposing that they form osteoblasts by a process of division, but it seems now so well settled that they simply disintegrate before the absorbents that it is hardly necessary to discuss the point. I may say that I, like many others who have essayed to examine this point, have been unable to see just what does become of them. They seem simply to disappear.

In older animals, when this portion of the cartilage in its entirety, including the cells, becomes calcified the process of absorption is studied to much better advantage; for before this time, the walls upon which the absorbents act are continually being broken by the opening of the capsules, with the protrusion of the fetal cells of the Haversian canals into them, and these are so numerous as to obscure other phenomena. But now the absorption of the calcified cells proceeds in the same orderly way as in the matrix itself, and the wall acted upon by the absorbent cells is continuous around the new Haversian canal, as shown in the illustration. Here we may trace the work of the chondroclasts, both by the presence of these cells, and the indentations, or bay like cavities left in the walls of the cartilage, both in the new Haversian canals, in which bone is not yet deposited, and in those in which it is, as is shown in the figure. In order to illustrate this to better advantage, I have prepared a representation of a single one of these absorbed spaces, or new Haversian canals in fig. 30, using for the purpose a high power, in which the chondroclasts, and their relation to the liquefying cartilage can be studied to better advantage. These are identical in form and function with the osteoclasts, and here should be termed chondroclasts, to indicate their position, as on the same principle we call them osteoclasts when found applied to the solution of bone. Here we find them applied in precisely the same way, and producing similar results. Touching the question of the destiny of the cartilage-cells, I may say that under the conditions last described, I have often found one half of one of these cut away by the absorbents, while the other remained in its matrix, which, it seems to me, definitely settles the question of the destiny of these cells, when in this condition at least. They are simply absorbed in the same way as the cartilage matrix.

The regular placement of the chondroclasts, in the absorption

of the articular cartilages, can not well be made out before the calcification of the cartilage cells. Their presence, however, is sufficiently manifest. They may be found about the walls of the liquefying cartilage, at many points, soon after the beginning of the process, but there seems to be no regularity whatever in their distribution, so that, in studying the process in this stage alone, one could not easily make out that these were the principal agents of solution. Indeed, it is extremely doubtful whether they are the only agents of this process, as we shall see in the study of that form which takes place in the shafts of tubular bones.

The articular cartilages are continuously increased by growth and division or multiplication of their cells, and as continuously absorbed and replaced by bone until the process ceases with the cessation of growth at maturity. This growth of the cartilage represents the lengthening of the shafts of the bones. This lengthening takes place mostly in the diaphysal form of the process, until that ceases by junction with the epiphysal, and it is at this time that we find the cartilage-cells of the epiphysis falling into rows before the advance of the absorbents. It seems therefore that the lengthening of the bones takes place mostly by the growth of the cartilage in this particular form, which I will describe more particularly later.

As has been said, the greater part of the skeleton is first laid down in cartilage. This is true of all of the long bones, and at a later period this provisional cartilage is replaced by bone. The mode by which this change is made in the diaphysis of the tubular bones, is distinctly different from that in the epiphysis. This relates especially to that portion, which is at a later period converted into the bone marrow, which really, at this time, includes the whole of the shaft of the bone. The beginning of this process is seen first, near the middle of the length, and in the central part of the cartilage representing the bone. Here the cartilage cells are seen to enlarge, and apparently move apart, so that in addition to the enlargement of the cells, there is also an augmentation of the matrix as well. Just how the increase of this matrix occurs is not well understood. Indeed, I may say that although the processes taking place in the growth of the cartilage have long since strongly attracted the attention of histologists, they have not yet been made out satisfactorily.



The fact of growth in this portion, and decided increased activity over that of the other parts of the cartilage is sufficiently apparent in the facts just stated, and, at the same time, there is a slight but decided enlargement of the diameter at this point, though the principal growth is in the direction of the length of the shaft. At this time a change becomes manifest upon the surface of the enlarged portion. The internal portion of the perichondrium is composed of moderately fine white fibers running for the most part lengthwise of the cartilage, and lying quite compactly together. Between these the cartilage cells arise; first as very fine white granular elongated points not unlike the fusiform cells of white fibrous tissue. Successively they grow larger, as we proceed inward from the surface, and finally the fibers fade away into the fully formed cartilage, without any very strict limiting line. Occasionally however, the change to cartilage is more abrupt, and there seems to be a more or less distinct limiting line between the perichondrium and the cartilage. Especially will this be the case in a cross section, or if the section is somewhat diagonal. Within the borders of the growing cartilage, the cells are still very nearly of the same form, but larger, and as we proceed inward, they gradually assume the usual form of the cartilage cells. Now at the point, where the cartilage cells have enlarged in the central part, and the enlargement of the diameter of the cartilage is seen, a change takes place in the inner layers of the perichondrium. Fetal cells, small round or oval cells, are deposited here and gradually separate the cartilage and perichondrium. This portion assumes a distinctly cellular type, and if the processes are carefully followed, with high powers, in sufficiently thin sections, it will become evident that some of these cells become fusiform (fibroblasts) and are proceeding to the development of white fibrous tissue, while others grow larger, and become arranged along the margin of the cartilage. The appearance of a layer of bone deposited upon the surface of the cartilage soon distinguishes these as osteoblasts. Here it is perfectly evident that an inner layer of periosteum has had a *de novo* development. This portion is evidently not a change of the perichondrium into periosteum. The change in the outer layer of coarse fibers is not so clear, for though some change is gradually taking place in

the form and disposition of the fibers, it does not appear to be the substitution of a newly developed tissue, as is the case in the inner layer. Such is the beginning of the deposit of subperiosteal bone upon the cartilaginous matrix, and this goes on coincidentally with the changes occurring within the central portions; for while the changes just described are in progress several capillaries have pierced the forming layer of bone, and found their way, by a process of absorption, to the very center of the cartilage, where the cells are most enlarged. Here the capillary loops enlarge, melting down the cartilage about them and forming a central cavity. This is filled with tissue of the fetal type, in which very small round cells (marrow cells) are especially abundant. These are evidently leucocytes deposited here from the capillary vessels. While these processes are in progress, further changes have occurred in the cartilage itself. The cartilage cells throughout its thickness become enlarged. This change spreads either way toward the extremities for a space, and these enlarged cells are seen to have fallen somewhat irregularly into rows, which coincide with the long axis of the cartilage. Very soon, or, we may say, coincidentally with these changes, areas of proliferation of cartilage cells are established on either side (toward either end of the future bone) of these enlarged cells, which are maintained throughout the period of the removal of the cartilage, and its replacement by bone. In fig. 33 I present an illustration from a pigmented section cut from the femur of a kitten, of the changes taking place toward one end of the future bone, after considerable progress has been made in the process. At *A*, the unchanged cartilage is seen, and the progressive changes are represented between that and the letter *F*, which latter shows a portion of the bone-forming area. Between *A* and *B* the cartilage cells suddenly become smaller, and the supposition is that this is by subdivision. In this process they fall into rows, which is continued to *E*. It will be noted that very soon the cells grow larger, and continue to do so, down as far as the letter *D*. In the study of complete sections, it is found that this growth is mostly in the direction of the length of the bone. Indeed, this is very apparent in the illustration, for, it will be noted, that at *B*, the cells are very much flattened, so that in the lengthwise section they appear banana-shaped with rather a dis-

position to enlargement at one end ; and, in the enlargement from *B* to *C*, they become somewhat rounded, mostly by gaining in breadth. At *C* also the capsules that enclose the individual cells are more and more separated in the direction of the forming bone. This represents the growth of the shaft of the bone in length, for after the osseous substance is once formed, it does not increase in dimensions by interstitial growth. The increment is always to the ends, first in cartilage, then by the process of growth represented in the illustration. In the region of *D*, it will be seen that the nuclei (the transparent portion of the cell fills the capsule) are diminishing in size and becoming rather ragged in outline. This is undoubtedly a mark of degeneration in the cell, and it will be noted that the growth of the cells ceases from about this point. They become passive, and take no further active part in the processes that are going on ; unless it be a slight advance toward disintegration as indicated by the progressive diminution of the nuclei. Occasionally a globular form will be seen occurring in the central part of the nucleus at this time, that closely resembles the marrow cells which appear so abundantly after the capsules of the cartilage cells are broken into by the absorptive process ; but I have never seen more than a single one of these in a cell, and must suppose that this is either a nucleolus, or, that it is an accidental dropping together of material of the disintegrating nucleus. In the region between *D*, and *E*, that portion of the mass that forms the walls of the capsules, in which the cells are imbedded, is undergoing the process of calcification, or infiltration with lime salts. At least, this is the general opinion of those who have examined the subject with reference to this point. My own examinations do not enable me to determine it. The whole of the cartilage, from the region *B* down, is much more transparent than the cartilage in which the changes have not yet begun, and this difference is rendered much more prominent by pigmenting. In this process the cell bodies remain absolutely transparent as represented in the illustration. This is entirely different from the epiphysal cartilage while undergoing this change. In these the whole of the cartilage takes the pigment in a marked degree, and this is true when the two forms are included in the same section, as I have often had them toward the end of the process of ossification. They also react differently to other stains•

This fact seems to show plainly that there is some chemical difference in the structures, to which this difference of reaction is due, but as yet I am ignorant as to what this difference may be.

The most interesting part of the process is that taking place at *E*. Here we find that the walls of the capsules, facing toward the central part of the length of the shaft, are successively disappearing before the advance of a growth of fetal tissue, and that the remaining or lateral walls of these same capsules become so many tubes in which this growth advances. Some of these, indeed, are also broken down, merging two into one, frequently making larger tubes. But for a space the greater number of them remain. This occurs, not in a few of the rows of cells that form the shaft of the cartilage, but in all of them together, generally forming very nearly a straight line through, or as seen in sections, across the shaft of the cartilage. That is to say, presenting a solid advance which includes the whole thickness as represented in fig. 33. There are no radiating canals, as seen in the absorption of the epiphysal cartilages, or in the absorption of tendons, ligaments and bursæ. (Compare with figs. 29 and 31.)

But before speaking further of the process of absorption, let us examine the tissue that is taking the place of the cartilage. At *h*, are seen the round cells (marrow cells) that are very generally advanced to fill the capsules from which the cells seem to escape, as soon as the capsules are opened. These are seen everywhere in the mass of fetal tissue, and they are often so abundant as to render the observation of the other cellular elements difficult. Furthermore, they are liable to be scattered over the other parts of the section, in the course of the preparation, and lead to confusion, unless special care is taken. On the right hand of the figure some of the tissue has been lost, but, in the other portions, it will be seen that these round cells are filling the capsules opened. At *N*, one seems to have been just opened, and these cells seem in the act of crowding into the aperture. At *o*, are pointed out fusiform or oval cells, applied closely to the remaining walls of the capsules which, it will be observed, extend to the lower end of the figure, and are marked with the letter *p* at various points. At *m, m, m, m*, are seen the cellular elements and fibers of the blood vessels, which are extended into each one of the opened tubes. *j*, Points out osteo-



blasts applied to the remaining walls of cartilaginous matrix, upon which no bone has yet been deposited. These are seen also in other parts of the figure. No deposit of bone is seen usually, until the space of several cartilage cells beyond the point of absorption has been reached, but at *K, K, K, K*, is seen deposited on the walls of the tubes a layer of bone which is in turn covered with osteoblasts. The new bone is deposited upon the remains of the cartilage, partially filling up the tubes formed by the opening of the capsules of the cartilage cells.

We may now return to the absorption area, represented at *E*. In this absorption I have been unable to identify a single well marked chondroclast, applied to the opening of the capsules of the cartilage cells. In fig. 33 all of the capsules opened are partly destitute of cells, *i.e.*, have not yet filled up with the advancing cells, but in fig. 34 I supplement this defect, by choosing for illustration a few capsules which the fetal tissue fills compactly. Here we find both fusiform and marrow cells applied to the boneward face of the capsules, sometimes the one, sometimes the other, or they may be mixed together. These fusiform cells have uniformly a well marked nucleus of irregular outline, instead of the pale round form seen in the chondroclasts and osteoclasts, and we see apparently the same cells applied to the remaining walls without witnessing any evidence of solution. The absorption cells appear in great abundance a little further away, removing portions of the tube walls and enlarging the channels. (Fig. 35.)

The agents of solution in this case are probably the small cells. It is well known that the leucocytes develop this power in a marked degree in other localities. They are the agents of solution of sponge, in the sponge-graft, of animal membrane sutures, ligatures, and other foreign substances. They are also the principal agents of absorption, when this process occurs in connection with inflammation. Furthermore, the absorption cells are undoubtedly developments from the primary connective tissue cells, which these round cells represent. They require time to make their growth, and during this period of growth are exercising their peculiar function, as has been shown on a former page. It may therefore be assumed that in the absorption we are now considering, the amount of tissue removed at one point being

only the thin wall of these capsules, is too small for the development of chondroclasts that will be capable of satisfactory differentiation from others by microscopic examination.

As I have already indicated, the remaining walls of the alveoli of the cartilage cells become the nidus for the deposit of bone, at a point removed, by the length of a few cells, from the point of absorption. It will be noted also that the greater portion of the matrix of the cartilage still remains, this having already been reduced to a very small amount, by the progressive enlargement of the cartilage cells, as illustrated in fig. 33. At a distance of a few cell-lengths further, the absorption of this remainder of the cartilage matrix, together with that of the greater part of the bone first deposited, is in active progress. This is best seen in cross sections, fig. 35. If these are stained with hematoxylin and carmine, the remains of the cartilage will be purple, while the bone deposited upon it will be red, which distinguishes them sharply and quite beautifully, and at the same time the cellular elements are well shown. In following up serially sections prepared in this way, and receding from the point of the beginning of bone formation, it will be found that the Haversian canals are enlarged and decrease in number, and in this process all or nearly all of the remains of the cartilage is removed. Indeed, in the central part of the shaft only a little bone is formed, and this is all removed after a time, to form the cavity. Along the circumference the bony formation is stronger, and is merged with the subperiosteal bone; but even this is also removed in time. In all of the central portion of the length of the shaft it is not reformed, or if so, it is only to be removed again; but toward the ends of the bone it is replaced with more mature Haversian bone.

The processes of bone formation and of its absorption are going on simultaneously in very close apposition. I have illustrated this in fig. 35, from a cross section of the rib of a young kitten, at some little distance boneward from the point where ossification begins. *d*, Represents a few Haversian canals cut across. *b, b*, Point out the bone, and *a*, the remains of the cartilage matrix, which, when there has been no absorption of the bone formed, lies centrally in the irregular rings of bone. Osteoblasts appear over a large part of the surface, but at some points absorption is in progress; the osteoclasts are pointed out by

the letter *c*. By the absorption overbalancing the deposit of bone, the space is gained for the bone marrow.

In all of these varying phases of bone formation, it will be noted that the active agents are the osteoblasts. These seem to be developed in the inner layer of the periosteum, or with equal facility in the tissue that fills the Haversian canals, or the endosteum. They are therefore not peculiar to the periosteum, but belong rather to the surface of the bone, whether this surface be an external or an internal one.

TO BE CONTINUED.

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### DISEASE AND MORALITY AMONG DENTISTS.

By DR. C. R. E. KOCH, CHICAGO, ILL.

In glancing over the volumes of "Statistics, Medical and Anthropological, of the Provost Marshal General's Bureau," which are compilations from the records of medical examinations of recruits, substitutes, drafted and enrolled men for military service during the war of the rebellion, some curious and astonishing facts are revealed. If figures do not lie, these volumes contain page after page of tabular columns of stern, cold, and convincing argument to prove that learning is a dangerous thing.

The poet who sings "that a little learning is a dangerous thing," and then couples this with the advice, which, transposed into vulgar prose, would say, get a great deal of learning and avert the danger, evidently never saw these War Department figures. Yet, if the greatness of poetry is co-extensive with the power of the poet to draw on his imagination, then these records prove, with arithmetical precision, that Pope was indeed a great poet, for the facts revealed by figures show much learning to be a dangerous thing and the advice given in the essay on criticism not to be good.

During the dark days of the rebellion at least, learning was a dangerous thing, and possibly may be still, to the existence of a perfect physical condition of man,—a condition which governments much desire when they convert their citizens into soldiers. We find in these volumes a series of charts and tables giving the record of rejections for physical disability by reason of diseased condition of 334,321 men, classed by occupations, and giving the

ratio of rejections of each occupation. These occupations are arranged in four groups, as follows :

1st. Professions, 11 classes, 7,576 men.

2d. Mercantile pursuits, 9 classes, 18,818 men.

3d. Skilled, 38 classes, 75,761 men.

4th. Unskilled, 18 classes, 232,166 men.

While the average of rejection of all men examined was 367 for every thousand, it was 520 in the professions, 479 in mercantile, 434 in the skilled, and 348 in the unskilled.

The following table shows in what order these four groups ranked, arranged by diseases, No. 1 being the highest number of rejections and No. 4 the lowest :

	All Diseases.	Obesity.	Diseases of Digestive System.	Diseases of Circulatory System.	Disorders of Intellect.	Paralysis.	Diseases of Nervous System.	Phthisis Pulmonalis.	Syphilis.	Chronic Rheumatism.
Professions . . . . .	1	1	2	1	2	1	1	1	4	1
Mercantile . . . . .	2	2	1	2	4	2	3	2	2	3
Skilled . . . . .	3	3	3	3	3	3	4	3	1	4
Unskilled . . . . .	4	4	4	4	1	4	2	4	3	2

It will be noticed that in these various classes of diseases the professions are fewest only in one class, and that is syphilis, which is, indeed, something to be proud of. An examination, however, of the annexed table will be found to show another surprising fact. If the absence of this disease is an evidence of purity, and this record is to be accepted as a gauge, then the professions rank in purity as follows: 1st, Editors (no taint whatever); 2d, Lawyers; 3d, Teachers; 4th, Dentists; 5th, Students; 6th, Clergymen; 7th, Physicians; 8th, Public Officers; 9th, Druggists; 10th, Architects; 11th, Musicians.

The table which follows here is compiled from the records, the figures are not carried out into their ultimate fractions, however. It shows the number of rejections for each class of diseases in the four general groups, and the eleven classes of professions per thousand men examined.

From this it would appear that dentists are particularly subject to excess of obesity, disarrangement of digestion (they lead



all others in that respect) and consumption. They are entirely free from disordered intellects and paralysis, and among the eleven classes our calling ranks 7th in disarrangements of the circulatory system; 9th in disorders of the nervous system; 8th in syphilitic troubles; and 6th in chronic rheumatism. Rank one being the lowest and eleven the most healthful.

Why this proneness to stomach and lung troubles among dentists? Our circulations, nerves and intellects appear proven above par by these statistics.

As editors are absolutely free from obesity, disordered intellect, paralysis, disordered nerves, syphilis and chronic rheumatism; it would seem a good thing for a dentist to become an editor as well. But, alas! Editors' digestions are nearly as bad as dentists, and, strangely enough, the poorness of circulation seems to be the greatest among editors, and their lungs are even worse than those of dentists. I am not an alarmist, but simply call attention to these facts.

	Numbers Examined.	All Diseases.	Obesity.	Diseases of Digestive System.	Diseases of Circulatory System.	Disorders of Intellect.	Paralysis.	Diseases of Nervous System.	Phthisis Pulmonalis.	Syphilis.	Chronic Rheumatism.
All classes examined	334,321	367	.64	93	35	4.10	1.41	12.	18.4	8.15	4.73
The professions	7,576	520	1.58	140	51	3.03	3.82	14.07	45.5	7.11	5.41
Mercantile	18,818	479	1.48	141	50	2.28	2.33	11.09	37.8	9.72	4.78
Skilled	75,761	434	.84	104	41	2.90	1.49	10.03	22.	10.6	4.40
Unskilled	232,166	348	.47	84	30	4.68	1.23	12.04	14.	7.25	4.81
Editors	73	740	.00	192	82	0.00	0.00	0.00	82.7	0.00	0.00
Teachers	1625	739	.61	112	47	1.23	4.92	12.3	47.3	3.7	3.69
Physicians	1235	670	.81	208	81	4.05	7.28	18.6	60.7	7.3	8.90
Clergymen	712	664	1.40	181	56	7.02	1.40	21.6	46.3	7.	7.02
Public officers	633	627	.00	189	71	0.00	1.58	17.6	61.6	7.9	9.47
Dentists	215	549	4.65	218	42	0.00	0.00	4.6	65.1	4.6	4.65
Lawyers	732	544	6.73	147	49	8.19	5.46	24.5	42.3	1.4	9.56
Architects	252	536	.00	127	51	0.00	11.9	15.8	63.5	11.9	0.00
Druggists	622	492	.00	151	46	1.60	4.82	17.3	40.2	11.3	4.82
Musicians	415	344	2.41	77	29	4.81	0.00	9.6	12.	24.0	0.00
Students	1062	329	1.88	45	21	1.88	0.00	4.7	22.6	6.6	1.88

## IODOFORM VAPOR.

By W. H. WHITSLAR, M.D., D.D.S., YOUNGSTOWN, OHIO.

In the *Chicago Medical Journal*, January, 1860, Dr. Brainard recommended *iodine vapor* in the treatment of indolent ulcers, for which he claimed great success, the iodine having a tonic and an alterative effect. In the same manner I have employed iodine and iodoform, but somewhat differently applied, in the treatment of teeth with simple caries, and more often when pulps are exposed. Iodine vapor is officinal, but there can not be an iodoform vapor because it is decomposed into its constituent elements when vaporized. The name "vapor" is given simply to indicate more clearly the manner of its use, when in reality is meant iodoform in minute division. Iodoform possesses qualities that iodine does not, antiseptically considered; being anæsthetic, which is augmented by the anæsthesia produced with warm air, it serves to facilitate operating, besides its use as a medicament. For the purpose of antisepsis in the case of exposed or nearly exposed pulps (those in which it is sometimes advisable to leave a portion of the leathery decay) and where it is desirable to have dryness, and that medication with liquids may be easy, then I find in many cases much advantage in the following procedure: Take an ordinary chip-blower syringe and dip the point of the nozzle into a quantity of iodoform, at the same time compressing the bulb and then relaxing it, the iodoform is drawn into the bulb. Now heat the point of the nozzle quite hot over the flame of an alcohol lamp and direct the vapor to the place desired, compressing the bulb to expel the iodoform. What is the result? A brownish vapor is emitted, which is iodine vaporized by the decomposition of the iodoform to some extent; with this vapor are carried over minute iodoform crystals. This will distribute very certainly the crystals of iodoform upon the surface to which the vapor is directed. Deposit iodoform crystals on a glass slide by this method and examine them under a microscope. One of the results of the decomposition of iodoform is carbonaceous matter, which will likewise be deposited similarly to the iodoform crystals if there is much decomposition, and it will assist very materially in capping exposed pulps, making a harmless and appropriate covering. Then, too, the iodine vapor will have its effect on the pulp

by being absorbed, assisting to tone up the condition of the lagging organ. The anæsthetic property of the iodoform, as mentioned before, combined with the warm air as an analgesic, gives decided advantages in operating in all cavities. With an extra bulb arranged to fit Dr. Register's hot-air compressor, this method would seem to be the *ne plus ultra*. In pulpless and foul-smelling teeth, or wherever iodoform is indicated, the vapor materially assists in the operation. There may be some objection raised to the odor of the iodoform, but never by the patient for whom you are operating. To disguise the smell many things have been tried, but I find that a good fresh tonka bean will completely disguise one ounce of iodoform and really render it sweet smelling. Tonka bean has no effect upon the medicinal qualities of the iodoform. The discoloration that occurs from the iodine will pass away before the operation is completed. I give this method to those who still adhere to the use of iodoform as one that has served me with satisfaction, and I hope others may derive from its use the same benefit.

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## PROCEEDINGS OF SOCIETIES.

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### DR. KINGSLEY'S SPEECH AT THE BANQUET OF THE FIRST DISTRICT DENTAL SOCIETY.

NEW YORK, JANUARY 19TH, 1887.

Mr. President, Ladies and Gentlemen: It has been my custom occasionally when called upon for an after dinner speech to provide against the possibilities of such utterances as might grow out of undue worship at the shrine of my predecessor, the God of Wine,\* by saying that no man should be held responsible for an after dinner speech. This evening I depart from my custom and say distinctly and seriously that I do not wish to avoid the responsibility of the remarks that I make, for I mean them in all sincerity, and I hope that I shall be able to express my thoughts so that you will understand exactly what I intend to convey.

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\*The Rev. Dr. Backus.

The toast is, "The Dental Society of the State of New York," and I am announced, as President of that Society, to respond to it. Gentlemen, I am proud of that position, but the Dental Society of the State of New York is not to be held responsible for my utterances this evening, because your President has announced me as its President. My utterances are individual. The Dental Society of the State of New York, as most of you know, is one of the legalized State societies of the United States. It is not necessary for me to go into any lengthy description of it or any history connected therewith; it is sufficient to say that the State Society exists by an Act of the Legislature, and in that Act there was created not only the State Society, but eight District Societies. Under the auspices of one of these societies we have been witnessing during the last three days the grandest exhibitions before the largest assemblage of dentists that ever met since the world began. We shall none of us ever forget how Dr. Taft in his response to the address of welcome, night before last, in language as eloquent as it was possible for any human being to use, paid his tribute to the dentists of the city of New York, and to the State of New York, of which New York City is only a part. You will remember how beautifully he alluded to it as the Jerusalem of the Jews, the Mecca of the Mohammedans, and the goal and desire of all dentists sooner or later in their lifetime to visit New York and become acquainted with the dentists living therein. I think I assume not too much when I say that in the ranks of the profession in the State of New York, including of course the city, there can be found more intellectual talent and more professional skill than can be found in any other State in the Union, or in any other limited locality in the whole world. We claim it to be the Empire State in more senses than one. As I said before, under the Act of the Legislature which incorporated the State Society there were also created eight District Societies. At this point I am reminded of the small boy who wanted to celebrate the Fourth of July in some way. His grandmother, with whom he was living, was disposed to encourage his patriotic idea and brought down an antiquated revolutionary musket that had been hanging on the hook for an age, and showed him how to load it. Having loaded it once she sent him out to fire it off. She waited but there was no report.



She waited still longer but no report. On going out she found Tommy putting other charges into the gun. "Why don't you fire it off?" "'Cause I'm afraid." "Give it to me. I will show you," she said, and with that she picked up the old blunderbuss and pulled the trigger. There were eight charges already in there, and when the gun went off the reaction was so strong that the old lady was floored completely, and lay senseless upon her back. As she began to quiver from one extremity to another with returning consciousness, Tommy, who was looking on and watching the performance with intense anxiety, called out "Lie still, granny, lie still; there are seven more in there just like 'em." (Laughter.)

Gentlemen, the exhibitions of these days were the exhibitions of only one of the District Societies of the State of New York, and there are seven more districts just like it.

But to continue this further would only subject me to the charge of self glorification, and therefore I desist. But, now that I am on my feet, and as your forbearance and courtesy to every speaker is such that you will not for a few moments put me down, I take advantage of the opportunity to say a few words upon another matter which I believe will be equally interesting to you. I have recently gained some notoriety from an address I delivered in Boston. I do not say reputation, I say notoriety. (Laughter.) Sometimes a man writes wiser than he knows, and sometimes he writes more foolishly. It is not for him to decide, nor in the usual line of things is it for his contemporaries to decide whether it was wiser or more foolish. What I have written I have written. It is not necessary for me to say to you that I was attempting to prove that dentistry was not a specialty in medicine. I believed then and I believe now every sentence I uttered on that subject. I am not now going to take up that argument. I simply wish to say that what I meant by that effort was, that while dentistry is certainly a branch of the healing art, dentistry in its practice the world over is distinctly a separate and independent profession from the practice of medicine as we understand it. I may have stated the matter correctly or incorrectly; it matters not now. As the result of my reflections upon that subject I reached a conclusion which was clear and logical in my own mind. It seemed to me the only deduction from the

arguments which I had made, and I believed those arguments sound. I had no other motive than that of dignifying the vocation to which I belong, and I believed I was dignifying it more by saying what I could for it as an independent profession than I could in any other way. I was sincere. But I find that in that address there is a single sentence or so that has attracted more attention than I had anticipated, and out of a single paragraph has grown the somewhat prevalent idea, I am sorry to say, that my whole effort was aimed in antagonism to the International Medical Congress which is to be held in this country this year in the month of September. In looking over the menu I find that our caterer here this evening has neglected to supply one course on his bill of fare which my palate misses. I doubt very much whether any of the rest of you have missed it, but I miss it, and propose to supply it for myself.

Gentlemen, bitter as it may be under some circumstances in life for a man to eat his own words, that is the course that I now take. (Applause.) To eat my own words voluntarily is not bitter, and to-night I relish the morsel. There is to be an International Medical Congress, and there is to be a section of Dental and Oral Surgery in that Congress; and the gentlemen who form the management of that Congress, and who belong to the medical profession, have invited us as dentists to be their guests. Who this night are the most honored individuals at this table, the members of the First District Society who pay for their right to be here, or the guests who are invited? To whom is the honor due; who receives honor, the invited guests or the members of the society, who by right belong here and extend to the others the invitation? If the medical profession in congress assembled extend an invitation to us as dentists to join with them in that congress the only question that comes before us is this: Will our beloved profession, which we love above all other professions, be benefitted or injured by joining that congress? I say to you, gentlemen, that I doubt whether there is a single individual in this assemblage, or throughout the whole land, who can say that he believes that dentistry as a profession will stand lower by joining that congress, or by forming a section there, than it would if it were to stay out. I believe, therefore, that if they can afford to invite us we can afford to go. Furthermore,

if the profession, of which we have such an honored member here to-night; if the clergy of the world at any time should hold an international congress and chose to honor us by asking us to come and take part with them, would we be demeaned thereby? Would we not be honored by the invitation? Should we decline? No. Let us go. (Applause.) So of the legal profession, or any other profession, or any other honorable vocation in international congress assembled.

Out of the remarks that were made in that address to which I allude, has grown a desire for an International Dental Congress to be held at some time or other, a congress of dentists and for dentists, a congress of their own, a congress to which every reputable dentist throughout the world may come to as his congress, and not wait for an invitation. Steps have already been taken, a temporary organization has already been formed, which is in no sense hostile to the Section of the Medical Congress. The present duty of the temporary organization is to provide a plan for a permanent organization which shall, in the estimation of those who are interested in it, best call out universal support, the time and place and the everything except that one thing being left open, and for the consideration of gentlemen who have the highest interests of the dental profession at heart, as above all other interests of a scientific nature, and with those gentlemen we can safely leave the whole matter. So far as I am personally concerned, and so far as my associates are concerned who are interested in the International Dental Congress, so far as I can speak for those who think with me that Dentistry is an independent profession, I say to you, gentlemen, who are the officers, and you who form the council and the government of the section of dental and oral surgery in the International Medical Congress, that we pledge to you our full sympathy, our moral support, and so far as it is in our power, our active support, until your work is accomplished. (Great applause.)

And furthermore, as the President of the State Society, while I can not pledge that Society, I can pledge you this: I believe that next May there will be a larger meeting of that society than was ever held before, and whatever influence I have shall be used to give the whole support of the State Society to the dental section of the International Medical Congress, so that it shall be

without any possibility of doubt a complete success and creditable to dentistry in America. (Applause.)

One thing more. Speaking for the gentlemen who are interested in the International Dental Congress, I say, while we pledge to you gentlemen, who represent the section of the International Medical Congress, our moral and active support so far as in our power to give, we ask in common fairness that you will give to us when the time comes the same generous support for the International Dental Congress, a congress of dentists and for dentists. (Great applause.)

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### THE REASONABLE BASIS OF PRACTICE.\*

#### DEVELOPMENT OF THE DECIDUOUS SERIES.

If we follow the evolution of a tooth from the epithelial germ to the enamel organ and the pulp, it will lead us up to its perfect development and its possibilities in the performance of function, but it does not necessarily lead us to the conclusion, that this growth develops force, and force means pressure, and pressure means irritation, and irritation means reflex action, new centres of irritation and new foci of inflammation. \* \* \* Growth proceeds, proceeds abnormally—that is, not in harmony with the development of the environment, the germ must have room, pressure begins and the young life at the extremity of the root responds with pain, and the nerves transmitting this to distant parts, new lesions are established and the child, possibly succumbs. We should endeavor to find the cause. The working out of hereditary laws has much to do with it. The combination of diverse physical formations in the parents. The transmission of diseased conditions or a condition of tissue that invites disease. The disturbance of molecular life ending in molecular death. Why do we cut the gum tissue? Is it there that pain centres? Not at all. We cut that there may be room for growth. If it be true that pressure exerted on the sensitive tissue at the extremity of the pulp, at the later period, the same thing will occur at the earlier. More than this, as growth proceeds the whole developing tooth, with its environments, will advance in the true direction

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\*Abstract of a paper by Prof. James Truman. Read before the First District Dental Society of the State of New York. Eighteenth Anniversary Meeting, Jan. 17, 1887.



of growth and this will be at all periods. \* \* \* Hence the thoughtful practitioner will take this into consideration and whether it be two months or forty-eight, prior to eruption,—as in the second permanent molar—the relief will be given by the lancet.

## PERMANENT SERIES.

The consideration of dentition leads to some thoughts on the arrangement of the series as they present a permanent form. It is well understood that the development means occluding force and that this is regulated by position. General and comparative anatomy have made the growth and the motions of the jaw familiar topics; but notwithstanding these lessons, enforced as they have been by our best writers, there seems to be a want of attention to fundamental principles here, that is producing, if my observation be not at fault, sad work in many directions. I do not ask you to consider the sixth year molar in this connection. It is but one of many and is governed by the same law and to no greater extent than any other of the thirty-two teeth. The development of the human series differs from all below in the animal kingdom, in that there is one unbroken series, the only exception, that I am familiar with, being the extinct animal, the *Anoplotherium* of Cuvier. In this sense then is it an advance of all below it, because it gives a higher and more complete masticating power. I use this in a modified sense, being fully aware that the human teeth are by no means equal as grinders to those of the ruminants or as beautifully developed for special work as the rodents. Yet if we regard them as a whole, both in their implantation, direction of force, unbroken series and the wonderful movements of the jaw, they have no equal in the animal kingdom. The law of growth of the human series is towards the median line, the deflection from the direct vertical being considerable. This has been brought about during development by the crowding of the molars upon the anterior teeth, these we all understand to be important to effect proper occlusion. To maintain this position requires it to remain unbroken; no tooth can be removed with impunity and no tooth can be parted with, without violating the law of human dental development.

## ABNORMAL FORMATIONS.

There comes a period in the experience of almost every practitioner, when he is brought face to face with abnormal developments. These may take the form of irregular formations of crown, supplemental and supernumerary teeth, twin teeth, congenital, or twin teeth, produced by growth of cemental tissue, multiplication of roots, etc., etc. Each of them might be dwelt upon, but I do not propose to so consider them. That their peculiarities have been fully appreciated I have serious doubts. They are important in practice and present themselves almost daily in some of the minor forms. The subject, however, has rarely been made a question for discussion, and yet there are some things in connection with them of deep significance, if we are prepared to accept their teachings, or rather their indications. This is especially true of the duplication of roots and the supernumerary teeth. To my mind the former point unerringly, to that retrograde metamorphosis towards the higher quadrumana, and while it may be nothing in the argument for evolution, it still remains a curious fact that in proportion as the human teeth approach the size of the higher order of anthropoid apes, just in that proportion will the number of roots equal the normal number of the orang (*Simia Satyrus*) the best developed toward the human series. When the bicuspid of the latter are wide in an antero-posterior direction, they present triple roots and in the inferior jaw two roots. These as well as the four rooted molars also represent, in their formation, the normal number of the orang. Again there are presentations of long, slender, spine like teeth that are present in various parts of the mouth. These dental formations recall very vividly some forms in the invertebrata and in others, some of the teeth of the vertebrata. Now these are more interesting to the evolutionist than to the practical worker, yet they are part of that deeper thought that we need to cultivate.

## PERICEMENTUM.

In the examination of inflammation of the various tissues of the oral cavity, we find too great a tendency to skim the surface of things. Let me allude, by way of illustration, to the pericementum. This, composed as it is of vascular tissue, is liable, as we all know, to extensive inflammation. *Pyorrhœa alveolaris*

and alveolar abscess mean very much to the dentist ; but both are, doubtless, treated in a peculiar perfunctory way, oftentimes discreditable to the operator. It is foreign to my purpose to discuss either of these pathological states in detail, and I only allude to them to illustrate a point. Pyorrhœa is, to my view, alveolar abscess reversed, and when this has been stated I think all has been said. I am well aware that this is not the accepted view. We hear much of sanguinous deposits, of deposits of tartar, and of the gouty diathesis, etc., etc. ; and while these may contain a germ of truth, it is just as well, in my judgment, to take the matter as we find it,—that is, as pure and simple inflammation of the pericementum and surrounding tissues. To those who hold strongly to the germ theory of disease—and I class myself with them—the low forms of life must always be a factor in these inflammatory conditions, and yet I think micro-organisms are not considered in the treatment as they should be, else why do we hear so much of surgical treatment as the best, and only treatment worthy of consideration ? Why do we hear so much of scraping the root if the pericementum, has anything to do with the life of the cemental tissue ? I ask these questions for others to answer. When I examine these pathological conditions in their minutest life formations, I find bacterial forms a prominent factor ; and when I find bone—for cementum is bone—denuded of its periosteum, I expect to find necrosis following. The idea has taken hold of the professional mind, it seems to me, that marginal irritation of the pericementum is a chimera ; that anything can be done with this membrane with impunity. It is difficult to understand from whence such teachings have been derived ; but that they exist is certain, from the remarks of some, and the practice of the majority. It is certainly time that we consider this matter entirely outside of self-interest. The position which I regard as sound, is that the periosteum of the tooth is one of the most delicate, and more easily disturbed in its function, than any part of the tooth, not even excepting the pulp itself. This must be true, or else it must be acknowledged that this membrane is governed by laws differing from other organs similarly constituted. The fact that it is composed of connective tissue, does not cast it outside of the pale of inflammation. Fully supplied with nerves, as it is, it must respond to all irritation, and the result will be congestion of

the vessels with which it is so freely supplied. This means inflammation, and it may mean final death. That it will bear, with the pulp, a great deal of intermeddling, is very true; but both are amenable to the same law. The practice of to-day seems to be to effect the present object and pay no regard to pathological conditions. If this be not true, then why the many appliances that directly bear on this important matter? Hence we have all sorts of clamps, some intelligently made to avoid pressure on the periosteum, others deftly manufactured as though they had this end in view, to irritate this delicate membrane. We have wedges devised and force recommended, but never a word as to the ultimate effect. Separators are introduced of great power, sufficient, in careless hands, to split the alveolar socket; but I have failed to hear any one express the possibility of danger. Is this due to lack of knowledge? Certainly not; but the present good is the objective thought. Periosteal inflammation from the use of clamps is a serious pathological condition. It need not happen with care; but so delicate is this tissue that, even in the most careful hands, it may occur. The effect is not immediate. Days after the operation the patient may complain of pain in that tooth, and the operator will search in vain for the cause, unless his attention is directed to the clamp as the possible factor in irritation. This is not theory worked out in the study, but a constant observation in practice, and must be common to you as myself. Yet, whenever I have had occasion to publicly mention this, it has been met with incredulity, if not with open ridicule.

In my observations of ulitis, in its various forms, I have found that development of micro-organisms, begins to increase rapidly from the period of first irritation. This will possibly account for the interregnum, from the time the filling is completed, until the period of greatest pain, perhaps forty-eight hours. To restore to normal condition means, therefore, primarily, the destruction of these organisms, and a germicide is the requirement of the hour. As factors in the production of pain these low forms of life are too much neglected.

The law of irritation is as applicable to the wedge, as to the clamp, and perhaps more so. It is driven in and may remain for hours. Can irritation be avoided here? I think not. The con-



stant use of the toothpick becomes also a prolific source of the very disease its use is intended to combat.

Another matter in connection with the pericementum may be appropriately considered here, that of the action of sudden force on this membrane and adjacent tissues. Force must be regulated in proportion to the character of tissue to be acted upon. Power must be calculated with the possibilities of readjustment, and further, it must be considered in connection with remote probabilities. Force applied to vascular organs means danger to the life of the tissue. Long continued, it may mean death. It may mean a hypertrophied condition as a resultant, and hence unlimited change. Applied to a tooth it means, within limits, simple motion in the socket, pressure upon the periosteum, and temporary periostitis. Beyond this it means fracture of the alveolus, and possible strangulation of the pulp, and certainly danger of perverting the nutrition of the tissues, and producing a permanent, disabled state of that tooth. I need only refer here to the example of the disfigurements caused by pressure in filling in centrals and laterals. These, all are cognizant of, and, they are the visible and mortifying results of bad practice, in the hands of every operator, no one of us being exempt. The conclusions I have arrived at are that force, to be properly applied, must be slow, to allow time for readjustment of parts, and the limit of its action must be regulated by understood anatomical and physiological principles. The question of irritation of the dental periosteum brings up another question: How far can we with safety go with bands on the roots of teeth? We have in the past two or three years taken another leap in the dark, with the same nonchalance that it has been taken many times in previous years. I allude to the insertion of bridge work. Its advantages are many, if we may form an opinion in the limited time it has been a recognized operation; and its disadvantages are few, but they are important. In the first place, are we not depending too much on one or two roots? Is not the character of the support out of all proportion to the weight and force of the piece applied? In the second, if we get our support from roots, is the possibility of pericementitis taken into the calculation? Thirdly, is regard had to future cleanliness, and finally, do we consider the possible danger of loosening and of swallowing small bridges?

The necessity of a band being placed at the neck is clearly understood as an essential part of the practice. It is asserted by some that this band may be driven with impunity on the root and upon the periosteum without the slightest danger. Acting upon this theory it is not uncommon to find it pressing on the membrane a sixteenth of an inch or more. If it can be proved that this can be done without resulting pericementitis, or necrosis of the part of the root so impinged upon, then have we something further to investigate, and the question may be asked, why will the pericementum tolerate this abuse with a gold band when it will not tolerate a clamp, a toothpick, or a simple string? That it does not always tolerate it is clear from the serious disturbance met with. That it does, in so many cases, is one of the most remarkable experiences in the modern practice of dentistry. My explanation of the immunity lies in the fact that care is taken not to force the band much above the gum. The excuse is often given that roots, selected for crown grafting, are useless for any purpose but this, and hence it is perfectly proper to take the risk. This may be sound reasoning in regard to the root, but it would seem that the future good of the patient, who has paid for an expensive operation, might be considered in the premises. My own judgment is that any interference with the peridental membrane endangers its life.

The fourth consideration, that of the danger of swallowing loosened, small bridges can not be regarded in the light of a small matter, when the terrible accidents are remembered now, according to Parreidt, running up into serious figures.

How much attention is paid to a consideration of systemic conditions in this connection, is very difficult to determine. How it is possible with such diverse and often ill-conditioned subjects, to succeed with this operation is beyond my own comprehension.

#### FILLING TEETH.

The points made in a former paper were that the cause of cervical decay had not been explained by any of the theories extant. I argued that during the period previous to the introduction of the mallet, decay of the cervical border was not a permanent feature. That this immunity from decay continued after the introduction of cohesive foil and contour work, with hand pressure. This free-

dom from destructive influences could only be ascribed to one cause, that of the use of hand pressure, without sudden impact and the jar and fracture of the tissue. Microscopical examinations long ago demonstrated that cracks were found, generally in enamel, doubtless produced by occlusion and extremes of temperature. Cracks were common in the labial surfaces of teeth, and visible to the unaided eye; but that these had no pathological significance. The very minute cracks in other portions, more extensively bathed with acid products, would be rapidly affected by imbibition of these fluids, and the result would be caries. As the cervical border would not be as much exposed to fracture as other portions, the inference was that under earlier methods of practice they were not a prominent factor in this destruction. On the introduction of the mallet, however, this was changed, and it was found impossible to avoid, with any degree of certainty, destructive disturbance at that border. My explanation was, that the sudden impact of the mallet produced fractures in the enamel and subjacent tissues, and these, by imbibition of the before mentioned oral fluids, and subsequent fermentation, established caries. In proportion to the force used would this be increased; hence electric mallets and power mallets of all descriptions would have a destructive result. The remedy for this would be found in a return to hand pressure, and possibly to rotation, as explained by Dr. Herbst, or what I regard as better, a modification of his method combining hand pressure, with sharply serrated instruments, and the rotating force.

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### CENTRAL ILLINOIS DENTAL SOCIETY.

PEORIA, OCTOBER 12, 13 AND 14, 1886.

*(Continued from page 142.)*

#### CEMENTS.

[In the absence of a paper, the following discussion ensued on the subject.]

DR. TOWNSEND said he still believed in the use of oxychloride of zinc for capping pulps, because it has a more favorable action upon the pulp. He uses Guillois' cement with good success. Cements for temporary fillings generally cause an improvement of

tooth substance in course of time. He does not use pink gutta-percha for root or any other filling, because the coloring matter is irritating, preferring the white.

DR. OTTOFY said, that both the oxychlorides and oxyphosphates, although improving tooth structure, have a deleterious effect upon the pulp, when brought in proximity to it, and hence, as a general rule, he first applies a thin coating of gutta-percha.

DR. LAKIN has good success in using oxyphosphate. He uses it in children's teeth, and for temporary fillings, guarding the pulp against thermal changes. The tooth should be kept dry for a time, and the filling varnished to protect it from moisture.

DR. CALL does not get very satisfactory results with cements; he finds that they soon become imperfect around the margin.

DRS. MOODY AND MCINTOSH use cements only as temporary fillings and with white gutta-percha at the cervical margins.

DR. DUNCAN has good success in mixing fibrous metal with the oxyphosphates.

DR. KULP found on removing a bridge which had been worn for three years, that the teeth covered by the cement under the caps had become very hard, flinty and glass-like. Sixteen years ago he placed in a compound cavity of a molar a cement known as "Cement-plombe," which he saw a few days ago and found as perfect as when first introduced.

DRS. K. B. DAVIS and GREEN said: If cements do not work easily, place a little ice on the slab before mixing; in some instances a little borax should be added to make them harden slowly. Subject passed.

#### CLINICS.

Artistic Arrangement of Artificial Teeth, K. B. Davis.

Gold Filling without Separation, E. C. Stone.

Root-canal Filling, G. Newkirk.

Gold Filling (Brophy matrix, soft and cohesive gold, hand mallet), T. W. Brophy.

Heroic Treatment of Blind Abscess, Louis Ottofy.

Gold Filling (Watt's crystal gold, Call matrix, Holmes' plugger), S. W. Lakin.

Gold Filling (electric mallet), G. S. Salomon.



## DISCUSSION OF CLINICS.

DR. NEWKIRK does not believe that successful fillings can be made without giving them proper contour, hence advises separation before attempting to fill proximal cavities. In this view Drs. Green, Tibbets and others agreed.

DR. MARRINER does not favor complete restoration, and generally desires a small space between the teeth.

DR. CALL recommends full contour where gold and gold, or at least tooth and gold, come in contact after the teeth have returned to their natural positions.

DR. MARRINER said that as far as the treatment of abscesses and the filling of root-canals are concerned, he is much in favor of fewer applications of medicines, and in those cases where the inflammation has not progressed beyond the first stage, he does not hesitate to treat and fill at one sitting.

DR. FITCH believes that operations performed even when pus is present, could be permanent and successful, since it may be absorbed and removed by the healthy tissues.

DR. NEWKIRK does not think that the pus corpuscles themselves are absorbed, but that the results of decomposition may be, and pyæmia might result.

DR. J. A. W. DAVIS said he would not recommend treating blind abscesses and the filling of the root-canals at one sitting, because of the subsequent inflammation which certainly must ensue.

DR. SITHERWOOD recommends few treatments, and the filling of root-canals sooner than is usual. Wedging accounts for much of the inflammation induced.

DR. OTTOFY said the treatment of blind abscesses and the filling of root-canals and the cavities with plastic material, all to be done at one sitting, naturally would find much opposition, it being such a radical departure from common practice; however, the remedies now at hand for these purposes are such that in very many instances, at any rate, the habit of so doing is justifiable.

Unless free access can be gained to all of the roots, the method is not to be relied upon, as cleanliness is the cardinal principle of success. The rubber dam should be adjusted, and the *débris* from the cavity entirely removed before any attempt is made to enter the pulp-chamber. The root-canals once opened, they should

never be bored, reamed, or any effort made to enlarge them, but instead, a good supply of very fine piano-wire instruments should be on hand. The canals are first *thoroughly* cleansed with ether and chloroform on cotton, never using such large pieces as to cause a pumping action toward the end of the root. These washings should be continued until neither odor or color is perceptible; however, in roots where the apex is very large, which is readily ascertained by the experienced hand, the cotton receives a slight yellowish tinge which does not cease, but this is no bar to proceeding with the treatment. After thorough cleansing, the peroxide of hydrogen is forced in, conscientiously, then the root-canals are again thoroughly dried, and a solution of bichloride of mercury (1 to 1,000) is also forced into and beyond the roots. The root-canals are again thoroughly dried, and with cotton moistened with eucalyptol and dipped into iodoform, these two powerful remedies are forced to occupy every available space in and beyond the canals, and while in that condition, the introduction of a solution of gutta-percha in chloroform, with iodoform added [1 ounce of gutta-percha solution, 1 drachm of iodoform], is immediately proceeded with, the root one-third or two-thirds filled with it, a cone of oxyphosphate is then made, which acting as a piston, is forced into the canals, driving the gutta-percha beyond the root (possibly), at any rate, into every part. The filling (of gold, if not a large cavity), or with any of the plastics, may immediately be introduced. An application of a counter-irritant to the gums is then indicated, which may be either a mixture of equal parts of tincture of iodine and tincture of aconite root; or an iodine paint, which is iodine dissolved in alcohol, four times the strength of the officinal preparation. In order that either may be effective, the tissue to which this is applied must be dry. The patient is instructed to return within twenty-four hours in case of trouble. As a general rule, inflammation, sometimes very severe, of three or four hours' duration, will follow this treatment. Three precautions should be observed:

- 1st. Do not select a patient who is lymphatic, anæmic, and of such a sluggish constitution that the system itself is barely properly supported.

2d. Use nothing but absolutely pure and reliable remedies, otherwise failure is certain.

3d. Each step must be conscientiously performed before another is taken.

DR. TIBBETS said that this kind of work ought to be tried on dentists themselves; he does not think that a blind abscess can get well without having free opening to the exterior, hence would on no condition fill without having first frequently and thoroughly treated the abscess. Many of the cases so often heralded as successes are dismal failures when carefully examined in after years.

DR. J. A. W. DAVIS said that much suffering is often caused our patients by a rapid heroic method of treatment, and he believes that it is the duty of dentist to patient to cause the minimum of suffering, and hence favors a slow, careful, and thorough treatment.

DR. MARRINER has found that, even where much inflammation exists, the pain ceases after the filling is completed.

DR. NEWKIRK said he does not believe that treatment of that kind can be successful; we take too much risk, and hence are unjust to the patient; nor does he advise forcing anything through the apex of the root, whether there be an abscess, a fistulous opening, or not. A closed sac, such as a blind abscess, should have an exit, a drainage tube, or some connection with the exterior until healed, before being hermetically sealed.

THE PRESIDENT thought that all agreed on one point, and that is, that the root-canals should not be filled unless there be perfect cleanliness; hence those who think they secure that at the first sitting, fill immediately, and others who do not, follow a course of treatment.

DR. TOWNSEND said he has seen a number who had teeth treated and filled at one sitting, and has found that often there occurs subsequent soreness, but the teeth apparently get well, yet months after the former trouble recurs.

Subject passed.

TO BE CONTINUED.

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## THE RESPONSIBILITIES OF DENTAL COLLEGES.

The number and character of the educational institutions of a country mark its standing among the nations.

That this is a land and an age of progress is evidenced by the fact that institutions of learning surround us on every side, and that their number is being rapidly increased.

The science of dentistry has made rapid strides forward in the last decade; the profession may well feel proud of the results of its quest for knowledge. It is necessary, however, to watch carefully, for even in the flush of victory, even now, sounds the bugle note of danger, and it behooves us to pay attention to the warning.

The number of dental colleges now in existence, and the manner in which they are conducted, is causing a widespread feeling of disgust in the profession, and unless the growth of this sentiment can be checked there is a possibility of retrogression instead of progression. While some of the colleges exist only for the gratification of a few ambitious men, and others seem to have no apology whatever to offer for their existence, the majority seem to be conducted on the "Almighty Dollar" plan. But a very few of the colleges do the real, honest, conscientious work which tends to elevate the profession to a realization of the highest ideal. This is a serious charge to make, but "'tis true, 'tis a pity, and pity 'tis, 'tis true." The evidence, alas, is so strong that we could wish it were not so.

The majority of college faculties seem to think that all that



is required of them is the instruction and presentation for degrees of as large a number of students as possible. That this is a laudable ambition is not denied, but, as teachers, they are in prominent positions, and their actions are subject to criticism. They must know, therefore, that the dental profession and the public good demand greater works at their hands—something more is required.

Instruction in professional etiquette is seldom, if ever, imparted to the students, and if a due observance and study of the code of ethics is required of them, the brutal manner in which the colleges often break such rules, would counteract the effects of their teaching. The methods employed by colleges to secure patients are such that no member of a dental society would dare practice, without fear of reprimand or expulsion. Yet the members of the faculties pose as exponents of the true professional etiquette, and, from the nature of their positions examples for the students to follow. It is the duty of the colleges to discountenance all quackish methods, and a few seasonable hints would materially influence students in establishing themselves on a foundation of strict principles of ethical practice. Wherever and whenever it is known that an alumnus is carrying his love of gain to such an extent as to discard the right principles of professional ethics, the friendly influence of his *alma mater* should be used to deter him, but if he has the example of his college, pursuing the same course or error, who shall blame him for following its meretricious example. The spectacle of reputable(?) colleges advertising for patients, placarding the walls of buildings and advertising in daily papers, and offering as inducements "experienced operators," "teeth extracted free," "only charge for cost of material," "excellent workmen in attendance," and, "it will pay you to call on us before going elsewhere," is anything but encouraging to the dentist who has high hopes and ambitions for his calling. Let the voice of the profession be raised against such charlatanism, and the dental societies and organizations, of which the faculties of such colleges are members, bring their influence to bear against the continuance of these practices. If we are to have more schools let them be true and conscientious both in teaching and practice, and if those colleges in operation are to continue, the profession can force them to conduct their business

in accordance with the "code of ethics," by refusing to send students to them.

If colleges are known to be disreputable, legal steps should be taken to disqualify them, and State Boards should be upheld in their endeavors to bring about a higher status.

Students of known proclivities for quackish methods should not be legally qualified to practice dentistry. If their ambition for their vocation has not corrected a mean tendency, they will most likely ever after be a detriment to the profession. No stone should be left unturned to secure for dentistry all the benefits such a noble calling deserves. Let the colleges lead the vanguard of progress rather than be a millstone about its neck.

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#### THE BREATH.

At the January meeting of Odontological Society of Chicago, Dr. Frank H. Gardiner read a paper on "The Breath," which provoked considerable discussion. The main thought of the essayist was directed to the elucidation of the cause of bad breath. On looking up the literature of the etiology of the mal-odorous breath, very little can be found bearing directly on it. It is true that the "Reference Handbook of the Medical Sciences" and a few scattered works consider the question briefly, but none authoritatively. The cause of bad breath is more than local. It transpired during the discussion that no new theories have been advanced on this subject for several decades. The general conclusions arrived at were, First: That decaying particles in the mouth as far back as the vault of the pharynx had little or nothing to do with tainting the breath as it is exhaled. Second: Mouth breathers have a bad breath when the tonsils are enlarged, inflamed, or when cheesy masses are found in the folds of their mucous covering. Third: That certain forms of gastric derangement taint the breath only when gases are eructated through the mouth. Fourth: The principal cause of bad breath arises from decomposition in the intestinal canal below the stomach, the retention of fecal matters in the transverse and descending colon, and the absorption of gases thence into the circulation, which are finally exhaled by the lungs. Fifth: Catarrh, nasal, pharyngeal,

laryngeal or bronchial, is a cause of bad breath. Sixth: the administration of medicines or the use of aliments which undergo chemical changes after passing the œsophagus may by their rapid absorption through the walls of the stomach, or immediately below it, contaminate the breath by giving to it the characteristic odor. Seventh: The dentist may here find a field for study in discovering the ultimate causes of bad breath and pointing out the correct treatment or the prophylaxis. The general opinion of the members of the society seemed to be against the theory that decayed teeth, inflamed or ulcerated gums, the influence of micro-organisms or other local causes, had much to do in producing bad smells, excepting only those cases wherein the patient habitually breathes through the mouth. We incline to the belief that the members were right, and further believe that a proper study of the causes of bad breath, which is a matter of great importance both to the dentist and his patient, will involve an investigation of the alimentary tract below or beginning at the stomach in order to solve this problem.

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#### IMPLANTATION.

The editor of the REVIEW implanted a first upper left bicuspid tooth Monday, Dec. 27th, 1886. A fragment of the root was removed and the socket deepened by the use of fissure drills. The tooth implanted had been extracted about fourteen months and had lain in a drawer uncared for until ten days before, when it was dropped into pure glycerine for five days, then taken out, a hole bored in the crown, pulp removed and roots filled with gutta-percha, previously syringing them with peroxide of hydrogen. It was then replaced in the glycerine, where it remained until implanted. Previous to implanting, the tooth was bathed in a five per cent aqueous solution of carbolic acid, to which had been added a few drops of cinnamon water, temperature about 115° F. It was ligated to the adjacent second bicuspid and the cuspid. Before dismissing the patient the gum toward the palate and lip was painted with a solution of iodol in oil of gaultheria. Second day, tooth elongated and sore to touch. Painted gums as before. Fourth day, patient feverish, tooth not so much

elongated, still sore to touch, gums looked well, but they were again painted. Eighth day, ligature removed, tooth not sore to touch, still tender when pressure was applied, re-adjusted ligature, painted the gums as before. Ninth day, no soreness. Tenth day, decided to leave ligature in place for two days longer. Did not see the patient until the sixteenth day when the ligature was removed, the gums bathed with turpentine water and the ligature reapplied. No soreness. The ligature was finally removed on the twenty-eighth day, and at this time the tooth was quite firm, the gum being adherent around the neck of the tooth, with the exception of a small portion on the palatal aspect about one-sixteenth of an inch long. There is now no pain or tenderness on slight pressure, either from the tongue, lip, or upon closing the teeth together. The color of the tooth at first was about three shades lighter than its neighbors, but at present it nearly harmonizes with those adjacent, and bids fair to assume the color of the living surrounding teeth. Five weeks after the operation the tooth is united firmly in the new alveolus, and being free from tenderness, bids fair to prove a success.

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### RECORDING CASES

Few dentists comparatively have the habit of recording the clinical history of cases which occur in their work. It may be well, therefore, to emphasize the advantages of such a practice, in the hope that it will be more generally adopted. The plan is applicable to all manner of cases, from a simple alveolar abscess, irritable pulp or pyorrhœa alveolaris, to a grave form of necrosis or a complicated fracture. It is best to keep a book especially for the purpose, or a ledger with sufficient marginal space. The previous history of the case should first be carefully ascertained and recorded; then the present condition, and thereafter each time the case is seen, the changes which have taken place, and the treatment which has been adopted, the remedy being specified, should be faithfully set down. No one can doubt that such notes would be of positive assistance in the conduct of any given case which possesses any difficulties, and it would always be of value for future reference; also, a number of such cases properly tabulated



would be of much scientific interest, and would furnish the specific data from which generalized conclusions could be deduced which would be of great practical and surgical importance.

It is unnecessary here to lay down any plan for this work—each will adopt one which will best serve his own purpose. Some of the clinical history books prepared for surgeons or dispensaries might, with slight alterations, be made to do satisfactory service. At any rate this work should be done methodically. We would emphatically appeal for systematic examinations of all cases presented, and this, we take it, will be one great subjective good which the habit of recording cases will establish, viz: a thorough and systematic method of examination and diagnosis.

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#### BLEACHING TEETH.

There are many methods of performing this every-day operation; some are good and others very bad. Teeth may be bleached with hot air, by electricity, with peroxide of hydrogen, but no single method can be used satisfactorily for all cases. A correspondent desires some information on this subject, and we present the following as one method.

After the root has been filled, and the tooth is free from tenderness, apply the dam, dry the cavity, and remove all discolored decay. Wash the cavity several times with fresh peroxide of hydrogen, and place a few crystals of chloride of alumina in the cavity (this may be procured of E. H. Sargent & Co., Chicago), moisten them with peroxide, and wait from three to five minutes, wash the cavity thoroughly with distilled water, then apply a solution of thirty grains of borax to the ounce of water, until the acid is entirely neutralized. Dry the cavity with hot air, and paint the interior with copal-ether varnish. When it is dry, mix oxychloride of zinc of the desired color, and fill the cavity full; allow it to harden, then prepare the cavity for the gold filling, and fill it at once. It will be noted that the whole operation is to be made at one sitting, and that oxyphosphate of zinc is not recommended as a lining for the cavity, or base for the gold filling. In the central and lateral incisor teeth we have glued white unruled note-paper to the labial walls with varnish, then covered it with oxychloride, and afterwards filled

with gold, and had a good result as regards color. A cause of failure is the performance of the operation on different days, thereby allowing moisture from without to gain entrance to the cavity, and contaminate the oxychloride. Never use a steel instrument when mixing it, and always allow the water of crystallization to be seen on the surface before cutting into it. Follow these procedures, and you will be surprised at the results.

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#### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

Dr. Black's paper in the March number of THE DENTAL REVIEW will begin the subject proper of the peridental membrane. The four preceding papers were intended as an introduction only to the study of the membrane in question, the author rightly deeming that a clear understanding of the development, structure and functions of the connective tissue group, the periosteum and bone, should first be had. From the slides and drawings already made we are able to promise that the succeeding papers will be of the greatest interest and value to the dentist who bases his practices upon a correct knowledge of the histological anatomy and physiology of the parts.

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#### DR. KINGSLEY.

Since the close of the "Anniversary Meeting" of the First District Dental Society two journals (*The Dental Cosmos* and *The Independent Practitioner*) have given editorial comments on what they term the "breaking down" of the opposition to the Dental Section in the next International Medical Congress. As will be noted, we publish on page 187 of this number Dr. Kingsley's speech in full at the banquet. We do not believe that the careful reader will discover that Dr. Kingsley has receded from the position taken in his paper read at Boston on "Dentistry Not a Specialty in Medicine," but, on the contrary, he still holds that in the main his views are correct. But for certain events, which transpired in New York before the banquet was held—on that very day in fact—the speech would never have been made. It was freely stated during the afternoon of that day, that in all

essentials the Section on Dental and Oral Surgery had the management of its own affairs, the collection and disbursement of funds, etc., and it was further stated that any reputable dentist, a member of a Dental Society, Dental College, Faculty or Alumni Association of a dental college, would be welcomed to the Section without invitation. Everybody said "Amen" to this. We believe it was in consequence of this concession to dentists that all opposition faded from view, and that that was the cause of Dr. Kingsley's speech—thinking for himself and those who believed with him, that the Dental Section would be no Section, unless every reputable dentist in the land was free to enter it, without the form of a special invitation. These words are written neither in defense of Dr. Kingsley's former position nor in opposition to the Dental Section of the Congress; but as a matter of right, with no other thought than to correct the wrong impressions which the editorials published in the *Cosmos* and *Independent Practitioner* may create. *Fiat justitia, ruat cælum.*

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## DOMESTIC CORRESPONDENCE.

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### LETTER FROM NEW JERSEY.

*To the Editor of the Dental Review:*

SIR—I went over to Gotham the other day for wisdom, the occasion being the eighteenth anniversary of "The First District Dental Society." I asked Abbott why they celebrated the "eighteenth anniversary," and he said it was because they were "fee-males." I immediately took a seat and listened.

This First District Society seems to have taken on new life lately, probably because Walker is the Chairman of the Executive Committee. Well, anything he gets behind will have to go, if weight will send it. The tail wags the dog this time.

It was a large meeting and a very good one. President Carr said it was the aim to make the society the first in the world, and Atkinson said it was "the very tip top pink of perfection now." It had grown so large, the president suggested that a

permanent meeting place be secured. He also very warmly commended the dental section in the International Medical Congress. Carr is generally on the right track.

Dr. Taft's reply to the address of welcome was excellent, and in every way worthy the occasion and place.

"New York should be to dentists as Jerusalem of old was to the Jews." "Amen" was said by everybody.

Prof. Truman's paper was worthy the man, and this is praise enough, for he is one of the most polished writers in the profession. He plead for a higher appreciation of dentistry, and for the young to take up where the old leave off. He did not believe in extracting teeth. He did not believe that a tooth of an Egyptian mummy could be implanted and its circulation be re-established.

He believes in bridge-work, but it requires an artist, and one who knows the structure upon which he is building, to make it a success. The failure of fillings at the cervical wall, more noticeable since the advent of the mallet, he attributed to that cause. Mallet force is too severe, hand pressure is not hard enough, and the Herbst method may be the happy medium for the salvation of the teeth.

The aim of the paper was to induce a "general stirring up of thought," and if the way it stirred Atkinson was a sample, it certainly succeeded, for the "old man" just went for the Professor and scalped him, took his "bark" off, tore him all to pieces, and then "sat down on him." The people enjoyed it, just as they did "the burning of Moscow." It seemed to be forgotten that the speaker was the honored guest of the society.

This "tip top blue blossom society" will have to establish, buy, or import a journal, and until this is done the "hall" had better not be built. Philadelphia has three journals, Chicago one, Buffalo one and St. Louis one. If New York wants to be the "tip top," she must have one also.

Not being a "distinguished foreigner," I was not "dead headed" at the banquet, and, being too poor, did not buy the five dollar ticket, and so did not go. However, the remarkable feature of the occasion, I am told, was the "unanimous unanimity" for the oral section. I hear some say, how about Jersey?

The meeting of the Central Dental Society of Northern New



Jersey was held at Dr. Watkin's residence in Montclair. The doctor has lately moved into his new and beautiful house, and there was a kind of house warming to his brother dentists. There was a large turnout of the members, and also many visitors, among whom I noticed Drs. Harlan, Brophy, Gardiner and Allport of Chicago, Drs. Dwinelle, Atkinson, Bogue and Kingsley of New York, Dr. Morgan of Nashville, Dr. Knapp of New Orleans, Drs. Marvin and Hill of Brooklyn, and many others.

Dr. Harlan's paper on "The Surgical and Therapeutic Treatment of Caries and Necrosis of the Alveolar Process in Man," was listened to with marked attention, and received hearty commendation from all.

Dr. Stockton said he was very glad to see so many present, especially after the feast of good things for mind and body which they all had enjoyed, the evenings and the days just previous in New York. We were certainly greatly indebted to Dr. Harlan for the many excellent thoughts and suggestions he had given us.

Dr. Atkinson, however, as usual "sat down" on the essayist and said if he would come to New York, the "tip top blue blossom place," and bring the paper, they would sit down together (not on him), and he thought they two could evolve a paper that would be just the thing, and it would be so good that all future generations would study it as a text book.

The interest of the meeting largely centered in Dr. Marvin's paper, in answer to the paper of Dr. Kingsley, "Dentistry not a Specialty in Medicine." When he had finished the reading, the general thought was (especially as Dr. Kingsley, the previous evening in New York had said he intended to support the section of dentistry in the International Medical Congress) that it would have been just as well if it had not been read, and the same thought was held in reference to all that was said concerning it. The general feeling now is that the International Medical Congress will be a success, and that no section thereof will be more of a success than that pertaining to dentistry.

It was a great regret to all that the lateness of the hour prevented a proper appreciation of the generous hospitality of the host.

It was whispered in my ear that at a future meeting another of Chicago's genial and able men would favor us with a paper.

JERSEY.

## LETTER FROM NEW YORK.

*To the Editor of the Dental Review :*

SIR—The reaction following the huge efforts of the 1st District Dental Society anniversary meeting was apparent to-day, when the usual monthly clinic was very sparsely attended and the operator announced failed to put in an appearance. The few incidents presented do not deserve mention—

The same cause evidently affected the attendance at the meeting in the evening. Only about one-third the usual number being present. Dr. Clowes of gardening fame sent in his resignation to the Society and it was accepted.

A vote of thanks was passed to all participating in the anniversary meeting and to the New York College of Dentistry, especially to the Demonstrators.

The paper of the evening was sent over from Berlin, Germany, by W. Xavier Sudduth, M. D., D. D. S. together with eight pathological specimens of ivory and two photographs. It was entitled "On some of the pathological conditions found in dentine and ivory," and was read by Dr. Geo. Allan of New York. The paper was divided into two portions; the first part going over a considerable portion of the same ground of the paper Dr. Sudduth presented to the Society over a year ago, in which he refers to enamel and dentine as *fixed tissues* and denying the presence of a reticular substance in the enamel. He stated, that where lesions occur in these tissues (dentine or enamel) they are due to one of three causes:

Perverted development; traumatic lesion or the action of some disintegrating agent beyond control. That consolidation of dentine, under fillings is the greatest where the filling material is most compatible with the dentine.

The second portion of the paper was a detailed theory as to cause and effect of eight pathological specimens of ivory, selected from a large number. He showed the different results attending the entrance of a bullet or spear in ivory without, and with penetration of the pulp, and when penetrating the base of the tusk. The specimens were very interesting and this portion of the paper was undoubtedly worthy of considerable praise. In the discussion which followed Dr. Atkinson praised Dr. Sudduth for the

energy of purpose and the brilliancy displayed by him in bringing forth theories, many of which although very fallacious, still excited discussion and thus brought out the truth. He accused Dr. Sudduth of jumping at conclusions and blamed him very much for using the terms organic and inorganic in a wrong sense.

Dr. Frank Abbott following asked how the reproduction of dentine is to be explained if Dr. Sudduth's statement is true that enamel and dentine are fixed tissues. Continuing, he said: Dr. Sudduth in his paper asks for the source of life of the enamel. Any one with proper amplification under the microscope can see that the source of life in the dentine extends into the enamel.

Dr. Geo. Allan closed the discussion for Dr. Sudduth. He regretted exceedingly that the doctor could not be here personally to present his paper as he could scarcely be expected to do it justice. He then gave a slight resumé of the latter portion of the paper and the meeting then adjourned.

There is a movement on foot here for a coöperative Dental Manufacturing Co. It has developed so far that very likely by this time it is the owner of Hodges plant for manufacturing purposes. A circular will be issued shortly to dentists, inviting their coöperation by taking not less than one and not more than five shares of stock. Every stockholder will be entitled to at least 20 per cent. discount. The plan is still *in embryo*, but is being supported by many prominent men in New York City.

“ VERITAS ”

NEW YORK, February 1, 1887.

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## FOREIGN CORRESPONDENCE.

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### SOME OBSERVATIONS ON ENGLISH DENTAL APPLIANCES AND METHODS.—LETTER NO. 2.

*To the Editor of the Dental Review:*

SIR:—In my letter in No. 1, in a general manner, I tried to note the present existing differences between English methods and appliances and those in vogue in the United States, noting the advantages or disadvantages of either from the standpoint of

recognized practice. In supplementing that article I hope to be able to continue on the same lines. One thing that strikes a stranger as a peculiar practice, is the great number of plain teeth that are used here in artificial work. In many cases this would lead to the production of the most artistic results, did the "workman" but understand how to utilize the means at hand to that end, but being essentially a workman, and not an artist, the result is a glaring advertisement to that excrescence of dentistry, the tinkerer, who fully believes dentistry is essentially a mechanical calling, and who has no capacity for appreciating harmony either in nature or art, and who is wholly content when he has pocketed his fee and seen his poor deluded patient ushered out of his presence, to be a walking exhibition of his "mechanical" capacity.

Where plain teeth are used they are mostly plate, or, as they are called here, flat teeth. They are used with equal facility for vulcanite as for metal work. The teeth of English manufacture having longer pins than those made in America, when used for vulcanite, the extreme end of the pins are flattened with pliers and then bent as the case requires. In many cases the molar facings are used, the articulation being effected by bringing the vulcanite up to the required height.

White rubber is generally used for this purpose. This, I think, is quite desirable in some cases, especially in full sets, as it prevents any noise incident in some cases on sharp occlusion. I have often thought it would be a good thing, if teeth could be had with platinum pin heads, on the cusps of the bicuspid and molars, or to have holes made in the grinding surfaces of the molars, wherein vulcanite could be placed to prevent the discordant sounds we sometimes hear when the teeth are brought together.

One reason why there are so many plain teeth used is on account of the vile and filthy practice quite common over here, namely, that of cutting off partially or badly decayed teeth that might preclude the addition to a case of another tooth—it being customary to charge so much per tooth—the roots are then left to do the best, or, rather, the worst they can, and where such a lot of offensive things are left (and I have seen entire dentures inserted without a single extraction or attempt at restoration to



health), no very strong imagination is required to realize the pollution of the victim of such a disgusting practice.

Where permanent cases are needed, gum teeth are very rarely used, the restoration of shrunken features being effected by the use of pink rubber, which, of course, can be moulded and finished to the requirements of the case, the contour produced being of a much less questionable nature than the color. While gum sections may present a hard, rigid appearance, between the two evils I should prefer the sections, to the unsightly display of questionable colored rubber one so often sees. There is a material in use here for making metal plates that I think is a good thing. It is called Dental Alloy. It is composed of platinum and silver. I am told it is prepared by melting and rolling, and when near the required thickness it is placed in nitric acid to remove the silver from the surface; then rolled to the required thickness. This leaves practically a platinized surface. The plate works about as easy as sixteen carat gold, and can be soldered with sixteen carat solder very well, while possessing an element of cheapness which gold does not. It furnishes a plate that will not change color in the mouth. Silver plates are not used here at all, owing to their being displaced by this alloy. Cast-metal plates are but little used here, the method of manipulation being very imperfectly understood, many old workmen never having seen one made.

In the adaptability of plain teeth to the greatest variety of cases I think the English manufacturers lead the world, for they certainly have attained to a proficiency hardly dreamed of in America. In addition to those already engaged in the production of the ceramic necessities of our profession, I understand there is soon to be another who will make a bold bid for public favor.

In the manufacture of artificial teeth a different method of manipulation is in vogue here to that common in the United States, the tooth body being *poured* into the moulds instead of being packed with a spatula. This secures at once a homogeneous mass, which on being baked, ensures a softness of shade, not found where the unequal density of a tooth is manifest by the innumerable large and small bubbles contained therein, showing beyond doubt, the particles are not in reasonably perfect apposi-

tion, thereby seriously impairing the refractive power of the tooth, and producing a hard vitreous surface, that is anything but natural in appearance.

The colors of English teeth do not stand so well when subjected to high temperatures as do those of American manufacture, owing possibly to some modification in their composition, but more on account of the before mentioned difference in the initial stages of preparation. That is the reason I believe there are no continuous gum teeth made on this side, a result that is to be deplored, for, were they obtainable, I think the results would leave little to be desired in prosthetic dentistry.

In connection with this subject, I wish to notice a convenient arrangement to facilitate the selection of teeth for a given case. Ash & Sons have a string of shade teeth, mounted on strips of nicked brass, all indexed and numbered, of all the shades they make. By having their stock assorted according to shades, the selection of teeth for a given case is a work of expedition and simplicity.

Of course there is much more pertaining to this subject that might be written about to possible advantage, but I will not intrude further upon your valuable space. In my next I hope to have a little to say about the operative side of the question.

LONDON, Eng., Jan. 20, 1887.

"78."

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As many of our readers are unacquainted with the fact that chemists or druggists, as we call them, are also tooth-stoppers and extractors, we insert the following, to show how our cousins are taken in and done for by the aforesaid quasi dentists:

CHEMISTS AND DENTISTRY. — *Sir*—Among the suggestions made by your various correspondents for increasing chemists' incomes there is one omitted which would affect, at any rate, a considerable number. Of the 14,000 registered chemists and druggists a great many are also registered under the Dentists Act of 1878; yet how few of them attempt to take advantage of that fact! Dentistry is a branch which might be pushed and extended considerably, and would pay for pushing. Some will probably say they registered merely to extract teeth, but that it is no reason why they may not aspire to the higher branches. To those I would say, Consult a respectable dentist (London preferred), and ascertain from him amount of fees for lessons in taking impressions, stoppings, etc., and they might arrange with him to do their mechanical work. They would find that a few complete and partial show dentures would be a great attraction, and an investment that would pay well. Those who are not registered would do well to also invest in sets, and arrange with a dentist to send down a qualified assistant to see patients, with whom the chemist might make appointments, upon terms mutually satisfactory. This is not a visionary scheme, as, having myself tested it with success, I speak from personal experience.

Yours truly,

—*Chemist and Druggist*.

ONE WHO KNOWS.

## REVIEWS AND ABSTRACTS.

THE AMERICAN SYSTEM OF DENTISTRY. In Treatises by Various Authors. Edited by WILBUR F. LITCH, M. D., D. D. S., professor of prosthetic dentistry, therapeutics and materia medica in the Pennsylvania College of Dental Surgery, Philadelphia. Volume I. Regional and Comparative Dental Anatomy, Dental Histology, and Dental Pathology. With 537 illustrations and 6 plates. Royal octavo, pp. 1010 and index. To be completed in three volumes. Price per volume, cloth, \$6.00; leather, \$7.00; half morocco, gilt top, \$8.00. Philadelphia: Lea Brothers & Co. 1886.

The scheme of this work contemplates an exhaustive and comprehensive treatise on every branch of modern dentistry. The various articles are to be written by specialists or by men otherwise eminently qualified for the different departments of the work.

A critical examination of the first volume reveals that in some respects it falls short of answering the requirements of the student who desires thoroughness and detail. Considering, however, the difficulties to be contended with in an undertaking of this magnitude the editor has achieved a grand triumph. The work is prophetic of greater things for the future, and is admirably calculated to supply the needs of the advanced student and practitioner.

The first article by M. H. Cryer, M. D., D. D. S., is very properly on the anatomy of that portion of the human body above the clavicle. The subject is treated in the usual manner, but contains little either in description or illustration which is not perfectly familiar to those who are acquainted with the ordinary text-books of anatomy.

It is to be deplored that there is such meagreness of detail in the descriptive anatomy of the parts directly related to the teeth themselves, both in illustration and text. This is specially noticeable in the case of the maxillary bones, alveolar process, alveoli, blood-vessels and nerves. The dental surgeon who consults this article to obtain accurate anatomical knowledge

of these parts will find it surprisingly inadequate. This is all the more noticeable, because in a work confessedly exhaustive of the subjects treated, and designed to meet the needs of the specialist, he very properly expects to find therein all that is known on the subject. In point of fact, Quain's *Anatomy* will in every way better supply the need of the oral surgeon. The excellent plates and figures in the recent work on anatomy by Faneuil D. Weisse, M. D., also points out what can be done in this direction and furnish a high ideal of what should be accomplished for the region of greatest interest to the dentist.

Jacob L. Wortman, A. M., M. D., in his article on the comparative anatomy of the teeth of vertebrata has presented the subject in a scholarly manner from the standpoint of a philosopher and naturalist. It is evident from the very first paragraph that a master and an enthusiast wields the pen, and his whole article is "replete with much interest" and instruction. A statement in regard to the development of teeth of vertebrates will be read with surprise by most students of dental genesis. On information from Mr. T. A. Ryder it is stated that many teeth of fishes are found far back in the pharynx beyond the limits of the invaginated integument (epiblast), and are truly of hypoblastic derivation. Hence the heretofore accepted generalization, that all teeth are specialized dermal appendages is incorrect.

We shall not be accused of being hypercritical or too exacting if we give expression again to regret that in this article, also, there is insufficiency of detail. The human teeth receive only the consideration which is accorded the organs of other vertebrates, which is barely what is adequate to the needs of the general scientist. This is in a measure compensated for by a series of six excellent plates from V. Carabelli's "*Anatomie des Mundes*," showing the temporary and permanent human teeth in their exterior conformation and in sections in different directions.

Part III, consists of the article on Embryology and Dental Histology, by Will X. Sudduth, M. D., D. D. S.

This is a well compiled mass of information on the subject of development and structure of the dental organs. The author opens with a chapter on the "Physiological consideration of Life-force," first asking, "What is the nature of life?" and then at once proceeds to expose the density of our ignorance on the ques-



tion, at the same time impressing the reader with the fact that he (the writer) is not a believer in the evolution theory, the doctrine of spontaneous generation, or the transmutation of species. Failing to answer the question as to the nature and beginning of life, the writer takes up the "unit of life as we are able to demonstrate it," and describes the structure of cells, their physiological and morphological conditions, in which description the "bioplason theory" is completely ignored. The order of classification of subjects is not always well planned; a consideration of epithelial cells, which precedes the "General Account of Embryonic Development," would have been in a better place had it followed it, and thus the use of terms not yet explained might have been avoided. Beginning the subject of embryology proper, with a general account of embryonic development, and a description of the various sources from whence such knowledge may be obtained and studied, the author passes to a more minute consideration of the different stages of development, from impregnation, segmentation and differentiation to the completely formed being. Under "Products of the Epiblast and Mesoblast" the close analogy of the development of the hair follicle with the enamel organ is well outlined. "Development of the connective tissue group" is a classified description of the tissue structures having their origin from this group. Unfortunately, the writer, like nearly all others on this subject, gives very little space to the peridental membrane, so until a new and revised edition of the work is issued, Dr. G. V. Black's researches in this direction, as published in the DENTAL REVIEW, will be the most complete work on the subject. The tissue which receives the most attention is enamel, fifteen pages being devoted to amelification, nine pages on development, besides numerous references to it in other portions of the work. Dean's translation of Legros and Magitot's work on the dental follicle is evidently and very properly the firm foundation of the author's theory of tooth development, and is freely quoted. Many of the illustrations are new, and from specimens of the writer's own preparation, giving to the student a clear idea of the text, and, taken altogether, the author is deserving much credit for the able manner in which he has portrayed the developmental process of all the tissues.

Part IV, treating of General and Dental Pathology, is a mas-

terpiece, in so far as our present knowledge permits calling it such. The subject is treated by G. V. Black, M.D., D.D.S., under the following heads: "General Pathology," "Dental Caries," "Pathology of the Dental Pulp," "Diseases of the Peridental Membrane," and "Abrasion and Erosion of the Teeth." James Truman, D.D.S., has an article on "Diseases of the Dental Pulp and their Treatment." There are also appended the papers on "Fermentation in the Human Mouth" by W. D. Miller, Ph.D., D.D.S., which have appeared in the pages of the *Independent Practitioner*.

The character of these papers is beyond criticism, each in itself is as perfect a treatise as could possibly be written by any man in the profession. The methods of diagnosing the various diseases of the teeth are described clearly and concisely, and the treatment recommended is such as has been found the most efficacious with reference to germ life. Here and there, one might differ with the various authors, as to certain statements on questions yet undecided and now under investigation; such difference would be, however, only theoretical and would not influence the practical ideas as set forth in the various articles. Special attention may be called to the chapter on "Caries" by Prof. Black. The subject is handled with his usual skill, the conclusions reached are carefully weighed and plainly expressed. In the Clinical History appear charts of the condition of caries of one hundred persons, carefully examined and tabulated in a manner which readily shows at a glance the relative proportion of cavities in each tooth.

In the chapter on the Pathology of the Pulp, the diseases to which that organ is liable, are described systematically and illustrated by drawings made from specimens of the author's own preparation. The stages of disease are traced with a scientific accuracy which hitherto has not been accomplished. This is also true of the treatment of alveolar abscess, a subject to which the author gives very careful attention.

INDEX TO THE PERIODICAL LITERATURE OF DENTAL SCIENCE AND ART AS PRESENTED IN THE ENGLISH LANGUAGE. By J. Taft, M.D., D.D.S. Philadelphia, P. Blakiston, Son & Co., 1886. Chicago, W. T. Keener. Price, cloth \$2.00.

A careful examination of the above index will reveal to the student a mass of information which can not be found elsewhere, without great labor and the loss of much valuable time. While it is incomplete in many respects, it is of undoubted value to every dentist, who may wish to know where to find a particular paper on the subjects which have been written upon by various writers.

#### CURRENT LITERATURE.

*Cosmos*, Jan. 1887.—This number contains an interesting article—the translation of the earliest known volume devoted to the teeth, by Chr. Egenolff, Frankfurt, Germany, 1541, which may be read with much interest in the light of the present advanced state of dental science. Dr. Harlan's article on Bacterio-Therapy read before the A.D.A., at its last meeting. Also an article by C. S. W. Baldwin, D.D.S., of New York City; of which the following is an abstract: It describes a method of mounting a Logan crown with a ferrule fitting the root perfectly. Select a Logan crown slightly shorter than would be used for setting without a ferrule. Countersink and prepare the inside of the root as for a Bonwill or any ordinary crown. If the outside of the root at the margin of the gum presents an irregular surface, then with Dr. Walter Starr's reducers shape it to such a size that the ferrule may be perfectly adapted to all parts. Take an impression, and produce in zinc or Babbitt's metal a die, to form which take a plaster model of the root-end an eighth of an inch long, and shellac it to the point of a cone, which can be easily made by turning down a large spool, thus making the deep mold in sand into which the metal is poured. With this die strike the gold (22 carat, No. 30 gauge is most commonly in use), laid upon soft lead. A few blows will produce a seamless and perfectly-fitting cover and ferrule. After trimming this to fit the festoon of the gum, drill in it from the lower side a hole for the pin of the crown, leaving the ragged edge produced by the drill. Then fill the counter-

sunk portion in a porcelain crown with oxyphosphate of zinc, and with the gold ferrule or cap in place, adjust the crown as you would wish it when completed. When the oxyphosphate is hard, you will find the ragged edge on the upper side of the cover will materially aid in removing and keeping the cap where it belongs. Unite the cover to the platinum pin in the crown with a small amount of soft solder, tin and lead, using muriate of zinc as a flux, a few blasts from a blow-pipe being all the heat required. Then fill the root with oxyphosphate and firmly press to place.

*Independent Practitioner*, Jan. 1887.—In addition to the article "Dentistry Not a Specialty in Medicine" by Dr. Kingsley of New York, and the reports of various Societies, this number contains a short article "On the Absorption of Dentine; Its Relation to the Process of Reimplantation and to Decay of the Teeth," by Prof. Miller of Berlin, Germany. The conclusions on the subject, reached by the writer are (in his own words) as follows:

"The fixation of reimplanted or transplanted teeth may, therefore, be accomplished in three ways:

"1. By simple encapsulation of the root. This mode of attachment is, I believe, frequently referred to in dental literature.

"2. By the bundles of connective tissue which fill up the irregular absorption spaces, just as a very porous body might become attached to soft tissue by the latter growing into and through the inter-spaces. I have a number of specimens showing this mode of union, which I have called a pseudo-attachment.

"3. By a direct union of the surrounding tissues with the living pericementum. This I am inclined to look upon as the only permanent attachment."

There are also several articles on "Implantation," one on the "Herbst Method" and on "Prehistoric Decay of the Teeth."

*The Dental Advertiser*, Jan. 1887.—Contains an article by Geo. B. Snow, D.D.S., on "The Physical Properties of Vulcanite," which is of interest to the great mass of the profession using that material. The remainder of the journal is filled with well selected material from the various periodicals and, in the main, timely and practical.

*The Dental Register*, Jan. 1887.—Is embellished with a frontispiece, a very fine portrait of Prof. Corydon L. Ford and the leading article is a biographical sketch of that gentleman. "Tin and



Gold Combined as a Filling Material," is one and "A Method of Preparing Dental Tissues for Microscopical Examination" the other of the subjects treated in this number; extracts, selections, etc., combine to make the number a good one.

*Items of Interest*, Jan. 1887.—This number is filled as usual with "Items" from many sources and on many subjects, all of which are of interest to the various grades of readers in our profession.

*The Ohio State Journal of Dental Science*, Jan. 1887.—Bears as a New Year's greeting in a frontispiece the cheerful countenance of that worthy pioneer of western dentistry—James Taylor, followed by a sketch of his life, written by Dr. Geo. Watt. This number also contains the beginning of a series of articles on "Chemistry as Applied in Dentistry," by L. P. Bethel, D.D.S. Judging from the first, this series will prove to be valuable. The writer, however, should be more careful in his proof reading or clearer in his statements as to the reaction of certain agents. In preparing hydric peroxide he states that Barium dioxide ( $\text{Ba O}_2$ ) is used, but gives the formula for *Baryta* which has but one equivalent of oxygen ( $\text{Ba O}$ ).

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CAULK'S DENTAL ANNUAL, Number V, 1886-7. L. D. CAULK, D.D.S., Editor and Publisher, Camden, Delaware. Price, fifty cents.

This volume of ninety-six pages is "devoted to the collection and dissemination of statistics relating to the business and practice of dentistry," and is the only American dental periodical which appears annually.

Parts of it contain much to commend it to the profession, but, *in toto*, it falls short of that for which it is designed, by being, in many respects, incomplete; undoubtedly this is not due to any lack of exertion on the part of the editor, but to the difficulty of obtaining statistics from those who have them in their possession.

The addition of foreign statistics, as well as copies of the more recently enacted laws governing dental practice, add largely to the value of the work.

We hope Dr. Caulk will continue the publication, and that the *Annual* may receive the support it richly merits.

THE WESTERN DENTAL JOURNAL. Editor: J. D. PATTERSON, D.D.S.; Associate Editors: A. H. THOMPSON, D.D.S., Topeka, Kan., and C. L. HUNGERFORD, D.D.S., Kansas City, Mo. Published Monthly by R. I. PEARSON & Co., Kansas City, Mo. Subscription, \$2.00 per annum.

The foregoing publication is the last to enter the journalistic field, having appeared January 1st, 1887. Its cover is neat and attractive, and the typographical make-up leaves nothing to be desired. The contents of the first number are well selected, and hence interesting to the reader. There are few slight errors of composition, and of names, which, however, are almost unavoidable in the first issue. Thus, for instance, in the report of the meeting of the Chicago Dental Society, of Dec. 7th, the names of Drs. Gardiner, Wachter, and Reid are misspelled. The DENTAL REVIEW cordially wishes *The Western Dental Journal* unlimited success, which, with its able staff, it undoubtedly merits.

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DR. PAUL BÖRNER'S REICHS-MEDEZINAL-KALENDER, für Deutschland auf das Jahr 1887. Theil II. Leipzig: Verlag von Georg Thieme.

This octavo volume, consisting of three parts, contains, respectively, pp. 234, 484 and 120, and is a complete medical register of Germany, corrected and revised up to about November, 1886. Of the great quantity of information therein contained, such as will interest the readers of the DENTAL REVIEW, will appear in its pages from time to time.

WE have received a copy of "Harlan's Register for Recording Operations on the Natural Teeth." Published by Keen & DeLang, 222 LaSalle street, Chicago. 300 pages, \$3.50; 500 pages, \$4.50. This register differs from most others in the arrangement of space by giving place for the day, month, year, number, hours, description of operation, charges, then on the same line place for date and credit. The cuts are very faithfully executed, and are more nearly fac-similes of the teeth than those heretofore in use. At the bottom of each page are half a dozen or more lines for remarks on treatment, etc., which is another good feature.

## QUERIES.

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### TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—In the January issue of the DENTAL REVIEW I notice a query by D.D.S. If, after the extraction of the second bicuspid, which was an abscessed tooth, the flow of pus from the antrum continues, access to the sinus should first be secured, which may be through the alveolus where the tooth was extracted or at some other point, which may prove more accessible after a careful examination of all the surroundings. A thorough exploration of the sinus should then be made, carefully probing for any foreign substance (a portion of the root, wood, food, etc.), which may have found lodgment therein; the removal of such substance should be followed by a thorough evacuation of all pus, by the use of the syringe and tepid water. Then inject a solution of Hydronaphthol (1 to 1,000 of water) and a solution of Bichloride of Mercury, in the same proportion, alternating these injections every other day. Unless there are conditions not described by the questioner, this treatment will be followed by a speedy cure. C. H.

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### TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—In using tin foil and gold combined, at points near the cervical margin, and filling part of the cavity with it, I have much trouble in securing attachment between gold and tin and the pure gold foil alone. Can some of your readers explain to me how to use the gold to secure perfect attachment? Several of the fillings I have recently made have failed at that point. J. L., Texas.

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### TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—What is the best material to use for the prevention of dark joints between gum blocks? How can I prevent blocks from cracking? I use the best teeth, yet occasionally these accidents occur, to my annoyance. Respectfully,  
N. C. FRANKS.

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### TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—A word to the wise is sufficient. I hope the readers of the REVIEW will take the advice of a fellow practitioner.

I find that most works on mechanical dentistry advise us to oil our impressions, and I think the great majority of dentists adopt it.

If you will notice the models made in this way you will find the surfaces of the same rough. Now, if instead of oiling your impression, you will simply wet it, you will find the model will come out with a hard, smooth and almost polished surface.

In filling a plaster impression give it a good coat of shellac varnish, and when thoroughly dry place it in water for a moment or two, then remove and shake off the surplus of water and fill as you would any impression.

With wax or modeling compound treat in the same way, only do not varnish it.

If you will try this I think you will never use any more oil.

Respectfully,

B. D. W

TO THE EDITOR OF THE DENTAL REVIEW:

*Dear Sir:*—In replying to an inquirer in the January issue, I would say that for seven years I have operated with great satisfaction before a sunny window with this arrangement of curtains: At the top of the window is hung on a spring balance fixture a white Holland curtain, capable of being drawn to the bottom of the window and of being stopped at any intermediate point. At the bottom of the window is another curtain of the same material which may be drawn to the top of the window or for any portion of the distance. With this arrangement one may have shade at the bottom of the window and light from the top, shade at the top of the window and light from the bottom, light from any cross section of the window, the whole window clear for a cloudy day, or the whole window covered with two shades for a glaringly bright day.

If more shade is needed one of these curtains or a third curtain may be made of darker or denser material, but this will rarely be necessary. We are in far more danger of not getting enough light than too much. On a very high window a belt or zone curtain, capable of being raised or lowered, may be preferred by some.

Closely connected with this subject is the relative desirability of different lights by which to operate, and I wish cordially to commend the southerly light. I have had experience in operating with light from all directions. For more than six years I worked in rooms into which the sun practically never shone. Since then and for a longer period my operating room has been so arranged that, except for a small portion of the afternoon of the longest summer days, the sun shines into it from its rising to its setting. Having regard for my comfort in operating and my general physical and mental well being, I would not go back to the northerly rooms if their occupancy were made gratuitous.

Yours very truly,

C. A. BRACKETT, 102 Touro street.

NEWPORT, R. I., January 24, 1887.

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## MEMORANDA.

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A dental department has been established at the University of Erlangen, Germany.

The *Archives of Dentistry*, formerly a \$3.00 journal has suddenly dropped to \$2.00 per annum.

Pack hydraulic gutta-percha between teeth when you wish to wedge them apart. Use Jameson's, made in London, Eng.

Use a wood, bone or ivory spatula when mixing oxychloride or oxyphosphate, and introduce the filling with the same instrument.

If any subscriber received a copy of the REVIEW in bad condition last month, the publisher will send a perfect copy on notification.

We are under obligations to contributors for their promptness in sending matter for publication, much of which must lie over until next month, for lack of space.



Dr. W. Mitchell writes that he has used fine binding wire for retaining the rubber dam, in place, for more than two years, and finds it of almost universal application.

By coating the surface of aluminium bronze with a solution of borax in water, heating the metal and immediately cooling in cold water, vulcanized rubber may be attached to it readily.

Dr. W. L. Croll (University of Penna.) and Dr. W. Mitchell (University of Mich.) have located at 15 Upper Brook st., London, and 29 High st., Windsor. We wish them every success in their new venture.

Although Harvard is the oldest University on the North American continent, having been founded in 1636, it is preceded in age by the University of San Marcos, founded at Lima, Peru, South America, in 1551, by Charles the Fifth.

In the January number of the REVIEW Dr. Allport recommends the use of oiled writing paper, to be placed between the instrument and oxyphosphate when pressing the pellet into place. We have tried it and find it a very neat method.

The St. Louis Dental Society elected the following officers for 1887: President, Dr. M. C. McNamara; vice-president, Dr. Henry Fisher; corresponding secretary, Dr. W. N. Morrison; recording secretary, Dr. John G. Harper; treasurer, Dr. A. J. Prosser.

A three per cent. aqueous solution of aseptol injected between the gums and teeth every three days for a couple of weeks will reduce chronic swelling, arrest the flow of pus and restore the gingival margins to their natural shape, and cause them to be free from tenderness.

Many dentists are in the habit of using oil to moisten finishing burs when cutting down the excess of gold fillings. Dr. Mitchell states that glycerine is much more effective, and that it is more agreeable to the patient, and that burs do not clog as they will when oil is used.

By touching the surface of heated gutta-percha with warmed eucalyptol, before placing it in a cavity, it will be found after heating, to adhere like paint to porous wood. The gutta-percha must only be moistened on the side which is to be introduced, and then very slightly.

On December 22d, 1886, the Washington City Dental Society elected the following officers for the ensuing year: President, Dr. M. F. Finley; vice-president, Dr. H. B. Noble, jr.; secretary, Dr. J. Wolf; treasurer, Dr. R. B. Donaldson. The annual address was delivered by Dr. M. F. Finley.

*A Change of Date.*—The Southern Illinois Dental Society will convene at Duquoin on the second Tuesday (12th) of April, instead of first Tuesday, "former date." All expecting to attend please note change. By order of the President and Executive Committee.  
G. W. ENTSMINGER, Sec.

"Salmagundi" in the December number of the *Dental Register*, is in error in believing that THE REVIEW "expects to find its patronage largely in the North-west," from the reckless manner in which subscriptions are pouring in from South and East, as well as from across the ocean, the confines of its circulatory limit may be difficult to determine.

The first annual meeting of the Western Illinois Dental Society was held at Galesburg Jan. 10 and 11. Macomb was decided on as the next place of meeting. The following officers were elected: President, Dr. S. J. Sharp, Kewanee; vice-president, Dr. G. A. Vawter, Cambridge; secretary, Dr. R. W. Bailey, Macomb; treasurer, Dr. D. E. Coulson, Galesburg.

In the *British Journal of Dental Science* for January 15, 1887, we find a report of the total number of fillings inserted at the National Dental Hospital, London, during 1886. Gold fillings, 860; other fillings, 7195. It appears from this statement that the use of gold in the hospital, is still too limited to give a practical knowledge to students, who are desirous of becoming expert operators.

Next year the University of Bologna, Italy, which is the *alma mater omnium alumnorum matrum*, will celebrate the 800th anniversary of its existence; this school of sages is the oldest in the world having been established 300 years before Heidelberg. Eight hundred years ago at this University, Emperors, Kings, and even the Popes, listened to legal discourses as then expounded by the renowned Jurist Warnerius.

In St. Petersburg, Russia, there appears a dental journal under the beautiful name of *Soborotchabny Vestnik*, which translated into English means *Dental Review* or *Dental Messenger*. It has been placed on the exchange list of the DENTAL REVIEW, and although at present not readable to any of the editorial staff, the services of an intelligent Russian have been secured, and anything of note to American readers will find ready space in the columns of this journal.

The dentists of Illinois are requested to report to "The Editor of the DENTAL REVIEW, Lock drawer 144, Chicago, Ill.," the names and addresses of all persons, whether dentists, physicians, barbers or others who practice dentistry in the State in violation of law. None but those who are registered on the books of the "Illinois State Board of Dental Examiners" are entitled to practice. Send us the names of persons about whom you have any doubt and we will look them up. A list has been in preparation for the past two months, but it is not yet as complete as we wish it to be.

The organization of four local societies in Illinois shows pretty conclusively that the dentists are wide awake in the territory assigned and the fact that more than forty of the members of the new societies have not heretofore been identified with gatherings of a similar nature proves their need. We congratulate the members of the profession on their evident determination to discuss matters of common interest, and hope they will strive to enlist all their neighbors as members at the coming meetings. The REVIEW again requests those in position to do so, to forward news items and professional memoranda as well as ? ? ?.

In the interest of positive medication, by scientific methods, we cannot refrain from cautioning the thoughtless and inexperienced against the indiscriminate use of mixtures and cure-alls in the treatment of abscess, or "ulceration," as is often (incorrectly) termed. The wonderful virtues of sure cures for "ulcerated teeth," secret "pain obtundants," and "nerve dressings," exist only in the imagination of the proprietors and vendors, and too often we hear of failure, when a little thought, some reading of medical journals and good books, would place such practitioners on the right track, and be of great benefit to their patients.

The Chicago Dental Club held its second annual meeting at the Tremont House, Monday evening, January 24, 1887. The following officers were elected for the ensuing year :

President—Dr. L. P. Haskell.

Vice-President—Dr. John S. Marshall.

Secretary—Dr. Arthur B. Freeman.

Treasurer—Dr. E. M. S. Fernandez.

Business Committee—Drs. Eugene S. Talbot, I. A. Freeman and Charles P. Pruyn.

ARTHUR B. FREEMAN, Sect'y.

The Mississippi Valley Association of Dental Surgeons convene on Wednesday, March 2, 1887, at Cincinnati, Ohio. Papers are promised from the following named gentlemen, and the program is not yet complete :

Nutrition—Dr. C. M. Wright, Cincinnati, Ohio.

Irregularities of the teeth, a case in practice—Dr. Geo. W. Keely, Oxford, O.

New Remedies—Dr. A. W. Harlan, Chicago, Ill.

Ways and Means in Dentistry—Dr. W. Storer How, Philadelphia.

During the session there will be demonstrations of Dr. Knapp's Oxy-hydrogen Blowpipe and Methods of Crown and Bridge work.

A case of third dentition is reported in Schönbrunn, Silesia. It is in a man 82 years of age, whose snowy locks are being replaced by black hair. So far, eighteen teeth are erupted and the others are in the process of eruption. Hufeland mentions two peculiar cases of a similar nature. One, Helena Gray, who died at the age of 105, who had a few years previously erupted several teeth. The other, Maria Willamow, lived up to 1807 in the Russian village of Tokatille, and died at the age of 106. At 100 she lost the first tooth of her permanent set, at 103 the second, and thus on till all had been lost. Immediately thereafter the third set made its appearance, and at death she is said to have possessed healthy teeth.

TEA AND COFFEE.—Resumé of the action of tea and coffee, tabulated by J. W. Putnam, M.D. :

First.—They retard digestion.

Second.—They retard destructive metamorphosis.

Third.—They are cerebral stimulants.

Fourth.—They are tonics.

Fifth.—They are not food.

Sixth.—Coffee is a diuretic.

Seventh.—It is an anti-spasmodic. *Medical Press*, Western New York.

NOTICE TO DENTAL STUDENTS.—Copies of this number of THE DENTAL REVIEW are sent to all the dental colleges in America for distribution to the students. It is earnestly hoped that each dental student will give the paper on *The Periosteum and the Peridental Membrane* an attentive reading. This series of papers—of which this one is the fourth—is an important contribution to the knowledge of these tissues, and when completed will be an authoritative treatise on the subject. Dr. Black is carrying on his investigations in a thoroughly scientific manner, as, in fact, all his work is done. He has already discovered and recorded in these pages facts regarding the functions and structure of the periosteum, and the methods of bone formations which were not before known. THE REVIEW therefore, has great pride in being the agency through which they are given to the medical world.

A movement is on foot looking to the appointment of a dental *interne* at the Cook Co. Insane Hospital and Infirmary. These institutions are located a few miles northwest of Chicago and the number of inmates will average between 1,500 and 2,000 the year round. Many need the services of a dental surgeon continually, and the practice and experience an appointee would gain during a year of service would be of incalculable value to him and not be without fruitful results to the profession if accurate records were kept of the cases seen and the treatment employed. We have been informed that numerous insane patients suffer from indigestion and other ailments on account of imperfect mastication of food. We are certain that, if on competitive examination a recent graduate were appointed, much benefit would ensue to the patients from intelligent dental supervision of oral diseases.

#### THE RELATION OF DENTISTRY TO MEDICINE.

This important question again presents itself. In what way shall we answer it? Are we to treat diseases of the teeth surgically or therapeutically? Shall we content ourselves with filling carious teeth regardless of the chemical action which brings about their annihilation, without the least effort on our part to correct it? We should learn thoroughly the use of remedies; this is just as important as having them to use.

Shall our knowledge of pathology be limited to a study of congestion and inflammation of the dental pulp and gums? Should we then say we were conversant with all the branches of medical science, including materia medica and therapeutics, when we know that creosote, carbolic acid and arsenic are the sole stock of remedies in the hands of thousands of practitioners of dentistry, who are making local applications to inflammation or suppuration, when in many such cases no dentist could cure them without constitutional treatment? We look abroad, and even in this advanced and enlightened age we see professional brothers, presumably in the full possession of their reason, surrounded by books of reference of the richest order, also supplied with periodicals filled with the ripest fruit of experience and observation, having all these advantages, they are practicing, daily, after the theories of the generations of the past.

Shall we not put forth a greater effort in acquiring knowledge of surgery, pathology, and therapeutics, as far as they can in any way be associated with or applicable to our practice? What the dental profession stand most in need of to-day is a greater knowledge of remedies, of their action, and how to administer or apply them. I care not to be a general practitioner of medicine. I consider dentistry as a profession a better one for a *young* man than medicine. I presume my views in this respect are different from those of many, but I do not feel like suffering the humiliation of turning over to the M.D. cases that, according to my presumption, are strictly within the province of dentistry, simply on the ground that I do not understand their nature. The great work to be accomplished by our profession, according to my theory, is to prevent caries of the teeth. If, however, we fail in this, our next duty should be to arrest it; this can only be accomplished by a knowledge of chemistry and therapeutics and a complete control of the patients, with a strict observance of the laws of hygiene, and last, but not least, the skilful hand of an honest dentist. So far as we succeed in preventing caries of the teeth, just so far will we be instrumental in doing the greatest good to humanity. A few good remedies, thoroughly studied, are worth more than thousands with an indifferent knowledge of their properties and uses. A correct knowledge of pathological conditions is always implied in the accomplished therapist, as a knowledge of mechanics is essential to the skilled operator. E. E. WADE.

CHEROKEE, KANS.





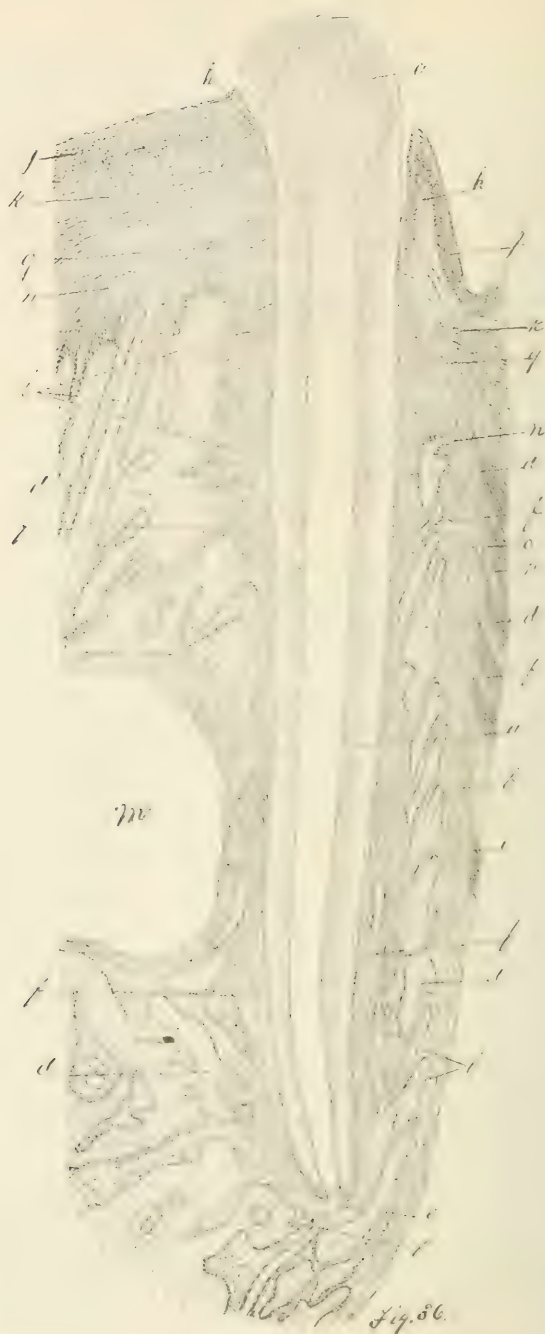


Fig. 86.

#### DESCRIPTION OF ILLUSTRATION.

Fig. 36, 2 in. obj. Lengthwise section of small incisor tooth of kitten with its membrane and alveolus. The portion included in the illustration is one-fourth in. long. *a, a*, Crown of tooth and dentine. *b*, Pulp chamber and root canal. *c*, Cementum. *d, d, d, d*, Alveolar walls. *e*, Apical space and apical foramen. *f, f, f, f*, Body of peridental membrane, showing particularly the arrangement of its principal fibers, their direction, etc. *g, g*, The cervical portion of the peridental membrane, showing the relation of its fibers to the gingivus *h*, the tangled mass of fibers forming the gums *k*, and the periosteum *n, n*, of the outer surface of alveolar wall. *h, h*, Gingivus. *j, j*, Epithelium. *k, k*, Coarse fibrous tissue of the gums. *l, l, l*, Bloodvessels traversing the peridental membrane. A section showing the smallest number of these was selected, for the reason that the fibrous arrangement is less distorted. *m*, Saculus of permanent tooth. The fibers of the peridental membrane become continuous with those of the periosteum at *n, n*. *o*, Periosteum. *p*, Attachment of labial muscles. The intention of the illustration is to give a full view of the arrangement of the fibers of the peridental membrane, and the relations of the tooth, membrane, and alveolar wall.



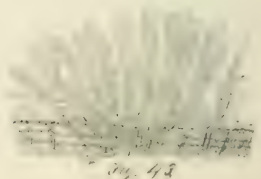
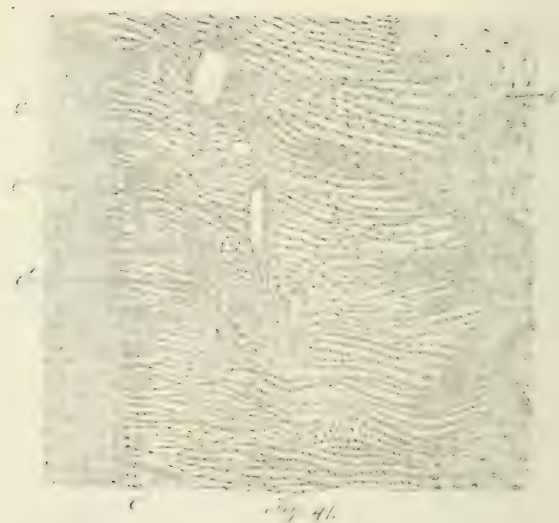
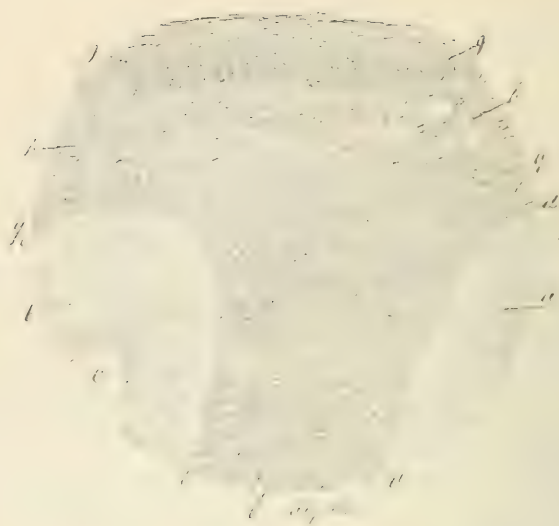


#### DESCRIPTION OF ILLUSTRATIONS.

Fig. 37, 2 in. obj. Cross section of the root of the temporary incisor (with the peridental membrane and alveolar walls, at about the middle of the lower third of body of the peridental membrane, showing the direction of the fibers of the membrane, and the position of the blood-vessels. *a*, The dentine. *b*, Cementum. *c*, Pulp. Its blood-vessels are shown. *d, d*, Alveolar wall, septi between the teeth. *e, e*, Peridental membrane. The direction and arrangement of its fibers have been carefully represented; also the position and relative size of its blood-vessels. *f*, Thin portion of the anterior alveolar wall. *g*, Hypertrophy of the cementum.

Fig. 38, 2 in. obj. Cross section of cuspid tooth with peridental membrane and alveolar wall cut through the thickened rim at the gingival portion of the alveolar wall, from a man forty years old. The membrane was very thin and firm, and a large piece of the anterior wall of the alveolus adhered to the tooth when extracted. It therefore represents an extremely thin membrane, while fig. 37 represents one that may be regarded as thick. *a, a*, Peridental membrane. *b, b*, Cementum. *c, c*, Alveolar process. *d, d*, Dentine. It will be observed that most of the blood-vessels of the peridental membrane lie in depressions in the alveolar wall.

Fig. 39, 1-8 in. obj. Fibers of the peridental membrane passing from the cementum *a*, to the alveolar wall *b*. The section is from the root of a first molar of a man about seventy years old. The point chosen for this illustration includes a portion of a strong band of solid fibers *c*, which pass unbroken from the cementum to the bone. More generally, the fibers, after emerging from the cementum, break up into finer fibers or fasciculi, as at *d*. This form of the fibers is better shown in fig. 42.



DESCRIPTION OF ILLUSTRATIONS.

Fig. 40, 2 in. obj. Cross section of the central and lateral incisors below (toward the crowns) the rim of the alveolar wall, or through the necks of the teeth, showing the tissue of the septum and of the gums anteriorly. *a*, Portion of central incisor. *b*, Lateral incisor. *c*, Pulp chamber of lateral incisor. *d, d*, Cementum of central incisor. *e, e*, Cementum of lateral. *f*, Fibers of the peridental membrane extending from tooth to tooth continuously. These are fixed in the cementum of each tooth, and form the tissue of the septum. *g, g*, Fibers of the peridental membrane, which join with the coarse fibrous tissue of the gums *h, h*. *j, j*, Epithelial covering of the gums.

Fig. 41, 1-2 in. obj. Peridental membrane from perpendicular section of a tooth of the pig, stained with nucleus tinting dye. *a*, Cementum. *b*, Bone. *c*, Blood-vessels cut diagonally. *d*, Nerve bundle. *e*, Lymphatics. A number of these are seen near the cementum. The principal fibers are transparent, while the interfibrous tissue is stained. The cellular elements appear in rows between the principal fibers, which are large and strong near the bone, and only partially break up into fasciculi in the central part of their length.

Fig. 42, 12th in. obj. (reduced.) Fibers emerging from the cementum and breaking up into fasciculi. From a peridental membrane of a molar of an aged person. This represents the more usual form of the principal fibers, as seen in old age in man. They pursue a somewhat wavy course, and generally the identity of the individual fiber is lost. They are inserted into the bone in compact bundles similar to those of the cementum.

Fig. 43, 12th in. obj. (reduced.) A group of fibers emerging from the cementum and radiating fan-like. On either side, the principal fibers are absent for a little space, which is filled with indifferent tissue. From the apical space (at the apex of the root) of a bicuspid of an old person.





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### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

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*(Continued from Page 183.)*

#### THE PERIDENTAL MEMBRANE.

The peridental membrane comprises that tissue which intervenes between the root of the tooth and the bony walls of its alveolus. It has received various names from time to time, as alveolo-dental membrane, dental periosteum, alveolo-dental periosteum, pericementum, etc. The office of this membrane may be regarded as threefold—functional, physical and sensory. It is functional in so far as it is the place of the development of the osteoblasts, which build portions of the alveolar walls, and the cementoblasts, which build the cementum. These cells seem to be received into the fibrous meshes of this membrane from the blood streams as leucocytes or amœboid cells, and here undergo their development, or that differentiation which fits them for the building of bone on the one side, and the building of cementum on the other. During this development they become allied to their respective places, *i. e.* the surface of the bone and the surface of the cementum.

The physical function is the fixation of the tooth in its position, a passive function which is performed by the fibrous elements. These fibers, which I shall designate as the principal fibers, form the bulk of the tissue of the membrane, and are fixed in the ce-

mentum of the tooth's root on the one side, and in the bone which forms the walls of the alveolus on the other, and are thus stretched across the intervening space in various directions, and in such a manner as to swing the tooth in its socket.

The sensory function is supplied by an abundance of nerves which enter the membrane from every direction through the walls of the alveolus, at the apical space, and by way of the gingival border below\* the rim of the alveolus.

Besides the osteoblasts and cementoblasts, the membrane presents various cellular elements; such as fibroblasts for the augmentation or renewal of its fibrous tissues; osteoclasts for the removal of the walls, or portions of the walls of the alveolus for the accommodation of changes in the position of the tooth, or of the cementum for the change of the form of the tooth's root. These latter seem to be developed as occasion requires, but are very generally present somewhere within the alveolus. Besides the cells mentioned there is always a considerable number of undeveloped cells within the meshes of the fibrous tissue in young subjects, but not very many in the old. There is also a set of lymphatics which are peculiar to this membrane. They occur in great abundance immediately surrounding the cementum in young subjects, but are much diminished in numbers in the old.

In many parts of the membrane there is seen an indifferent inter-fibrous tissue. It is a tissue composed of cells and fibers, not possessing very marked characters, intervening between the principal fibers in many places, especially where these are large, and making up the bulk of the membrane in certain localities where these are absent and accompanying the blood-vessels and nerves.

The form of the membrane is such as to closely invest the root of the tooth and fill its alveolus, but it does more than this, for it invests the tooth lower down than the lowest border of the alveolar wall. The membrane may conveniently be divided into three divisions: the apical, that portion surrounding the immediate apex of the root, or occupying the apical space fig. 36 e; the

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\* In the description which follows, the tooth will be regarded as a cone of which the end of the root is the apex and the crown, the base. Therefore toward the apex of the root is upward, and toward the crown is downward, no matter whether the tooth is in the upper or lower jaw.

body of the membrane, which fills the alveolus from the apical space to the lower border or rim of the alveolar wall *a*; and the gingival portion, or that part immediately surrounding the neck of the tooth below the rim *g*.

The thickness of the membrane varies very much in different individuals, and in different teeth in the same individual. It is thickest in the child, and it becomes thinner (normally) as age advances until forty, or perhaps sixty years has been reached. In fig. 37, I give a very accurate outline of a cross section of the alveolus with its contents from a lamb (temporary tooth), cut at about the middle of the lower third of the body of the membrane; and in fig. 38, another from the cuspid tooth of a man forty years old, cut a little closer to the gingival border, so as to include the thickened rim of the alveolar wall. These are drawn with a two-inch lens (using a camera lucida), and then reduced one-half, and illustrate very fairly the extremes which occur, normally, in the thickness of this membrane. Such blood-vessels as could be clearly seen with this low power are shown in their proper positions and dimensions. It will be seen that these are usually midway between the alveolar wall and cementum, in the central part of the membrane, in the young subject; while in the old they are more generally close to the bone, indeed very many of them lie in grooves in the alveolar wall.

The direction of the fibers of the membrane in the position of the sections is indicated as perfectly as is practicable with this low power of the microscope. Variations in the thickness of the membrane are presented in its different parts, but these seem to follow no rule whatever, except that it may be that the apical portion is generally somewhat thicker in young subjects. With this exception, the differences in thickness seem to be mere irregularities in the contour of the alveolus, which is constantly undergoing change by absorption and rebuilding of bone. The general form of the membrane is better seen in fig. 36 from a lengthwise section of an incisor tooth of a young kitten. This tooth, though very slender, is so small, only three-sixteenths of an inch long, that it gives a better opportunity for a full length illustration than the larger teeth of man. The elements of the membrane are the same, however, both in form and arrangement in relation to the root of the tooth and its alveolus. My principal object

in presenting this illustration has been to give a correct outline picture, including the entire root with its alveolar walls, in which the direction of the fibers should be correctly indicated in all of its parts. For this purpose I have selected a section in which the fewest number of blood-vessels appeared, and in which there is, therefore, the least distortion of the fibrous arrangement. On the lingual side, there is some modification of the form of the alveolus occasioned by the nearness of the crypt of the permanent tooth, a portion of the sacculus of which is seen at *m*. This has caused the thickness of the membrane to be diminished in its neighborhood. Farther toward the crown, and also toward the apex of the root, the membrane is thicker. A close study of the illustration with the aid of the description accompanying it will give a good idea of the general form and arrangement of the membrane.

#### THE PRINCIPAL FIBERS OF THE MEMBRANE.

Those fibers which are fixed in the cementum and from thence stretch across, and are fixed in the alveolar wall, or into some other tissue, as the fibrous mass of the gums, and thus serve to maintain the tooth in its position, I shall term the principal fibers of the periodontal membrane. These are of first importance in the study of this membrane, for with the exception of some deviations from the usual course of these for the accommodation of the blood vessels and nerves, the other elements are so disposed as not to interfere materially with their arrangement. The structure is at the same time so very complex that we need to bring to our aid every available device for gaining a clear comprehension of the arrangement of its elements. To this end the arrangement of the principal fibers should be first studied, and afterwards the character of the fibers themselves, and following this the inter-fibrous elements.

#### ARRANGEMENT OF THE FIBERS.

Beginning with the gingival portion we find the principal fibers firmly fixed to the cementum, literally springing out of it, and passing directly out, or but slightly divergent, from all the surfaces of this part of the tooth. The manner of the fixation of these fibers in the cementum will be studied in detail later.

On passing out from the cementum they may retain the solid form (fig. 39) or split up into fasciculi of finer fibers (fig. 42).



In the latter case, which is the more common, they show some disposition, in many localities, to gather into loose bundles, the elements of which pursue a common course. But more generally perhaps the bulk of the fibers lie parallel with each other, deviating only to give place to blood-vessels and nerves, or the larger groups of lymphatics. Upon the labial and lingual surfaces of incisors these, after passing out some little distance from the tooth, are lost in the coarse, tangled, fibrous tissue of the gums. This is fairly well seen in figs. 36 and 40, *g, g*. Usually there is a fairly strong fibrous bundle turning down into the gingivus (fig. 36, *h*), especially on the labial side. Nearer the border of the alveolar wall the fibers pass on under the gum tissue proper, and are continuous with the outer layer of the periosteum of the outer surface of the alveolar walls. As these pass the margin of the alveolus, fibers, springing out of the bone, first decussate with, and then become mingled with them, thus forming a very firm support to the gingivus. This bundle has been termed the dental ligament.

As we pass around the teeth toward the lateral surfaces a disposition of the fibers to bend away laterally is noticed (fig. 40), and before we have fully reached the lateral surfaces the fibers may be traced continuously to the neighboring tooth, following a somewhat curved course, and passing the lower margin of the alveolar wall. Between neighboring teeth the fibers pass directly, or at a slight inclination from one tooth to the other, being fixed into the cementum of each (fig. 40, *f*). In the central part of their course many blood vessels are seen, which cause more or less deflection in the course of individual bundles of fibers. If the horizontal section, including two teeth, is cut very close to the margin of the alveolar wall the fibers will be found to break up into bundles near the central portion, and many of them pass out of the section, while a portion continue on from tooth to tooth. The arrangement of the fibers on the lingual side does not differ materially from that of the labial as shown in fig. 40.

The gingivus, or free border of the gum (fig. 36, *h*) is covered with a moderately thick but very dense epithelial coating, surmounted upon the fibers emanating from the cementum of the neck of the tooth and the dense tangled mass of fibrous tissue

forming the gums. Considerable importance has been given to that portion of the epithelium of the gingivus lying next to the neck of the tooth, which is composed of softer and more delicate cells than other portions. I will return to this point later.

The fibers of the lower portion of the body of the membrane run nearly directly across from the cementum to the walls of the alveolus, which they enter. Those entering at the rim of the alveolus usually have an inclination upward (toward the root of the tooth) as shown in the illustration, but a little farther upward they run squarely across, following nearly a straight course. It is here that the largest and strongest fibers of the peridental membrane are found, and we can often trace individual fibers entirely across from the cementum to the bone, even in young subjects, both in lengthwise and cross sections. It is the region from which the sections for figs. 37 and 38 were taken. As we pass farther toward the apex of the root the trend of the fibers in passing from the cementum to the alveolar wall becomes more and more downward (toward the crown), and at the same time a greater disposition to form into fasciculi or loose bundles is noted. In young subjects, when the membrane is thick, some of these bundles are very long, reaching for a considerable distance along the root to be attached finally to the alveolar wall. This disposition to form into fasciculi is seen most prominently perhaps, well up toward the apex of the root, where a greater portion of the alveolus is occupied by indifferent tissue. Here fan-like fasciculi radiating from the cementum become quite common, standing out as broad bands of fibers pursuing a straight course from the cementum to the bone, as if put upon the stretch; as shown on the lingual side near the end of the root of the tooth in fig. 36.

Finally in the apical space (fig. 36, *e*) the disposition of the fibers is extremely irregular. Indeed in young subjects the tissue here has often more the appearance of embryonic tissue, in which there are few fibers developed, except those accompanying the blood vessels, which latter are large and often divide into a number of branches, some entering the apical foramen to supply the pulp of the tooth, and others passing down in the peridental membrane. In older subjects fibers are developed here which pass pretty directly from the root to the bone in radiating fasciculi.

This is in brief the arrangement of the principal fibers of the membrane, as seen in well prepared sections. However, many sections, when large numbers are examined, will come under the lens, that will show wide variations from this arrangement. First, if the lengthwise section is cut a little to one side of the center, perhaps very few fibers will appear; or one not well skilled in the examination will fail to make them out as they lie among the cellular elements, for the reason that they are cut across at more or less of an angle. Especially will this be the case if the section is mounted plain in glycerine, or if it be well stained with a good nucleus-tinting dye. In either case the cellular elements will be rendered prominent, and the fibers, which remain transparent, will be hidden from view. I have many sections in which no fibers could be made out, but from the fact that they are so thin that the cells of the inter-fibrous tissue, which lie between them, appear in rows (fig. 41). Those prepared in the same manner, but which are a little thicker, so that the cells lie upon the fibers as well, show no appearance of fibers whatever. The same class of sections, however, stained diffusely with carmine, or pigmented, show the fibers prominently. Secondly, many lengthwise sections follow blood-vessels which traverse the membrane in this direction. These often are surrounded by more or less indifferent fibrous tissue. These fibers may lie parallel to the course of the vessels, and it is manifest that where the line of one of these happens to be followed, the membrane will appear, or rather will actually be divided into two parts, one of which will be attached to the cementum, and the other to the alveolar wall. It will be seen at once that unless the elements seen are well understood, a very erroneous conclusion may be arrived at, that of a double membrane. One would suppose from reading our literature that such had actually been the case.

With increasing age the cementum is thickened, the walls of the alveolus are strengthened, the thickness of the peridental membrane diminished, and all its fibers shortened by being included in the cementum on the one side, and in the bone on the other. In this case the fibers generally appear to pass more directly from the cementum to the bone in all of the upper portion of the alveolus; yet the general trend, as illustrated in fig. 36, is fairly maintained.



If this arrangement of the fibers be studied with reference to the physical functions of the membrane—*i. e.*, that of maintaining the tooth in its position during the strain of its normal usage, it will be found that it is the very best that could be devised for the purpose. The tooth is swung in its socket in such a manner as best to resist a strain upward upon its crown, and save the tissues of the apical space from injury, while the fibers running squarely across in the lower third of the body of the membrane prevent displacement laterally.

The fibers of the peridental membrane are wholly of the white or inelastic connective tissue variety. There are no elastic fibers, or, at least, I have not been able to find any remaining after dissolving out the white fibers with alkaline solutions. The *form* of the principal fibers, though in many respects bearing a close conformity to the fibers of the internal layer of the detached periosteum is peculiar to this membrane. Indeed, in many localities no difference could be observed, if the examination were confined to the immediate surface of the alveolar process. The fibers of this portion are, however, in the main, larger than those of the periosteum and rather less thickly placed. While in many localities they break up into fine fibers almost immediately after passing out of the bone, as is the case in the inner layer of the attached periosteum, in others they continue far out into the membrane as strong, seemingly, solid cords, with perhaps finer fibers and cellular elements running in a different direction, interwoven between them. In thin sections cut parallel with the fibers and stained with a good nucleus-tinting dye this arrangement gives the tissue a very characteristic appearance. The fibers are, in this case, perfectly transparent and invisible, and the cellular elements, which lie between them, appear disposed in rows as shown in fig. 41. Sections from the same series diffusely stained, or pigmented, show the fibers prominently.

The appearance of the fibers varies very much in different cases, and even in the same case in different modes of preparation and staining. For instance, fibers that appear as solid cords when stained with hematoxylin, may appear as fasciculi composed of very fine fibers, when stained diffusively with carmine. By this means we learn that the most compact of these coarser fibers are really condensed bundles of fine connective tissue fibers. In the



peridental membrane these, the individual fibers, are often as compact as any that I have seen from the strongest tendons, but these coarser fibers are not themselves gathered into bundles as in the tendons. Hence the fibrous arrangement here is not similar to that of a tendon or ligament. While the fibers in many localities, especially next to the bone, are large and strong, each one stands somewhat apart from its neighbor with other elements intervening, which is not the case in the tendon or ligament. Therefore while the passive function of this membrane is that of fixation of the tooth in its position and of the same nature as that of a ligament, it has not in any of its parts the structure of a ligament.

The fibers passing out from the cementum are somewhat smaller and more thickly placed than those springing from the alveolar wall, but otherwise have the same character. In young subjects the parallel arrangement of these is somewhat interrupted near the cementum by the lymphatics which lie between them in great abundance. These fibers springing from the cementum on the one hand and from the bone forming the walls of the alveolus on the other, stretch across the intervening space in the directions indicated in fig. 36, but there is something more in the arrangement. While in some cases individual fibers are maintained as such, and can be traced from side to side, as shown in fig. 39, the rule is that the larger fibers springing from either source break up into fasciculi of very fine fibers as shown in fig. 42, and their individuality is lost by commingling with others. The fasciculi are, however, continuous from the bone to the cementum. The central part of the membrane therefore seems, and is actually composed of finer fibers than either its cemental or osteal margin. The fibers springing from the cementum very generally break up into fasciculi almost immediately. It is only near the cervical border of the membrane or opposite the rim of the alveolus that we see them generally continuing as solid fibers for any considerable distance. However occasional fibers, or a few together, may be found here and there in any portion of it which do continue from side to side, especially near the apex of the root where there are often found individualized groups of such. Those arising from the bone and especially those near the rim of the alveolus often continue as solid fibers through one-third or even

one-half the thickness of the membrane, giving off only occasional small fibers, but near the central part they generally break up into fasciculi and their identity is lost.

In the thick membranes of young subjects there is usually a very distinct vascular region near the central portion, or midway between the bone and the cementum. It is in this region or zone that the principal blood-vessels and nerve-trunks are found. This causes much irregularity in the course of the fibers of this region, for the fasciculi are deflected from their course in passing the vessels. Besides these deflections we often find considerable bundles of fibers, especially in the middle portion, or high up on the root, pursuing a course very different from the general trend, and these pass between the fasciculi and have the effect of modifying their course. In cross sections of the contents of the alveolus these are seen cut across.

As age advances the appearance of the tissues of the membrane is considerably changed. Most of the cellular elements disappear, and the fibers appear more prominently. These latter are very much shorter, and it is easier to follow them through from the cementum to the bone. In many regions there is no appearance of inter-fibrous tissue whatever, and fasciculi or bands of fibers cut parallel to their length often appear prominently. In fig. 39, I have represented such a band of fibers seen passing from the cementum *a*, to the alveolar wall *b*. The illustration is taken from a perpendicular section of the roots and alveolus of a first molar of a man seventy years old. The fibers of the lower portion of the figure *c*, pass entirely through the membrane without breaking up into fasciculi. This occurs only occasionally in rather small bands of fibers lying parallel or nearly so. The more general form of the fibers is that represented at *d*, in the same figure where they break up into fine fibers soon after leaving the cementum, as in figs. 42 and 43. In passing the sections about under the lens, bringing different portions of the membrane successively into view, a great variety of appearances will be noted. Wherever the section is parallel with the length of the fibers they will be seen emerging from the bone and cementum, and generally breaking up, as shown in fig. 42, into fasciculi that then pursue a wavy course, usually more or less obliquely toward the other side. Not very frequently strong

groups will be found arising from either bone or cementum that spread out fan-like, as seen in fig. 43, some of which may be traced through the membrane while others pass out of the section or are lost by mingling with other fibers. In rambling over the membrane with the microscope many points are found at which there appears to be no attachment whatever. This in many instances, is from the fact that the section is not parallel with the fibers at that point, which can often be definitely made out by the presence of fibers cut obliquely. But at other points, and these are not few, certainly no attachment has existed. Indeed the principal fibers may be absent and the fibers of the indifferent tissue may lie flat upon the surface of the cementum or bone for a considerable space. Their course being parallel with the surface. At some points the cause of the detachment is evidently recent absorptions of the alveolar wall or of the surface of the cementum, and the principal fibers may be seen to have been severed. The osteoclasts are found frequently, and the roughened surface tells plainly of their action, even at this advanced age. It has become plain to me after a long study of this point that the attachment of the fibers is continually changing. They seem to be loosened and remain so for a time, but they are again attached, or new fibers are developed. Some other part is loosened and again attached, so that in passing around the root of a tooth of an old person these non-attached points are continually coming into view. This will be studied more in detail under absorptions within the alveolus.

As has been said, the inter-fibrous tissue is much diminished in old age. At many points none whatever can be seen; at some points, however, there is so much of this that it might be mistaken for a young membrane. In running along the surface of the cementum occasional groups of cementoblasts appear with undeveloped cells in their neighborhood. The same appearances of local activity are met with along the bony wall also.

TO BE CONTINUED.



## ARE MICRO-ORGANISMS NECESSARY TO PUS FORMATION.

BY G. V. BLACK, M.D., D.D.S.

The thought of pathologists has been that the formation of pus is a vital act of the tissues and follows severe inflammation, or occurs in the healing of wounds, as one of the train of normal events. The idea that this process does not belong to the vital phenomena displayed by the tissues, has entered the minds of very few, perhaps; and with the observations of the past in which this event has so regularly followed in wounds or resulted from inflammations, it seems almost incredible that the time-honored opinion, one that has been accepted as a truism in all past ages, and down to the present, should now be questioned.

But very recently (*New York Medical Record*, December 25th, 1886), Dr. Knapp, an oculist of New York, has published views that are very significant, if not startling, on this subject, and he has summed up strict experimental evidence going far toward the establishment of the view that pus is not produced except in the presence of bacteria, and through their agency, that can no longer be ignored by pathologists.

There is no class of medical men to whom these matters come more closely in their daily practice than to dentists. We should certainly be abreast of the world in knowledge of these matters. Indeed we have to do directly with pus formation, and must take measures for its hindrance, or for its eradication, in every case in which we open the canals of a tooth's root; which, with those of us who are in full practice, is a thing of daily occurrence. This fact alone is sufficient to show that too much stress can not be laid upon gaining a correct understanding of this subject.

Dr. Knapp sums up the evidences that suppuration occurs only in the presence of micro-organisms under three questions:

- "1st. Does traumatism of any kind! produce suppuration?"
- "2nd. Do foreign bodies occasion the formation of pus?"
- "3rd. Are there any kinds of chemical agents that cause suppuration?"

On the first of these is cited the well known fact that subdermal fractures of the bones heal without suppuration. This fact is too well known to require any elaboration. But there are occasional exceptions to the rule, and these require some



notice. The attention of clinicians has been strongly directed to this, and the search for the cause of this unusual suppuration has been vigorously followed. In this search it seems to have been pretty thoroughly established that in such cases there has been an established focus of suppuration in some other part of the body. And the suggestion that in such cases the pyogenic fungi have been transferred to the point of fracture from the abscess through the medium of the blood, has given rise to severe experimental tests with the view of ascertaining whether or not this is possible. Becker and Krause fractured the limbs of healthy animals and observed that they healed regularly without suppuration. They repeated these experiments in the same way, except that they injected pyogenic fungi into a vein of the ear (in rabbits) and found that in these cases the fractured limbs as regularly suppurred, and the same order of fungi as that injected was found in the pus, thus furnishing direct proof that pyogenic fungi may be conveyed to other parts by way of the circulation; and, while not necessarily producing injury at the point of inoculation, may produce suppuration in localities where *inflammatory exudates* give them a favorable nidus for development. This result has occurred with such regularity in these experiments that it is assumed by the experimenters that, in case suppuration occurs in subdermal fractures, this is a sufficient proof that a focus of suppuration exists somewhere in the body, whether such focus be found or not.

In addition to this testimony Dr. Knapp relates his own experiments in which he has lacerated, bruised, cut, and burned the eyes of rabbits in the most hideous way, aseptically, and uniformly without the production of pus; while comparatively delicate operations contaminated with pyogenic fungi as regularly suppurred. In many of his trials Dr. Knapp operated in the same way on each eye of the rabbit, one aseptically, the other contaminated with pyogenic fungi. The aseptic wound regularly healed by first intention, the septic as regularly suppurred. These operations were reported at length in the *Archives of Ophthalmology* last summer and the *New York Medical Record*, Dec. 25th, 1886. As a criticism upon these two series of experiments taken together I would remark that it seems somewhat strange that fungi should not occasionally produce suppuration

in the eye operated upon aseptically, having found their way thereto through the blood-streams, as in the experiments upon fractures.

The second question we do not need to discuss. I think it is fairly established that a foreign body does not, *per se*, produce suppuration. A bullet may lie in the flesh for years, shift its position by gravitation, etc., yet not cause the formation of pus. Other observations also go to establish the fact that foreign bodies do not of themselves produce suppuration. I may, however, mention the fact that Dr. Knapp thrust broken pieces of rusty hair-pins, previously brought to a glow, but not otherwise cleaned, into the eyes of rabbits and found that they did not cause suppuration. These were introduced with antiseptic precautions.

The third question is the most difficult of all, and the one upon which the greatest stress has been laid. Certainly if suppuration can not be produced by chemical irritants, the question of the production of pus by any form of injury *per se* must be given up, and the cause of this act must be sought without the tissues themselves. That is to say, the life forces resident within the tissues have not within the range of their unaided vital processes the power of the act of pus formation. This is the rather startling position to which we will be driven. I think such a proposition will be received by pathologists with great hesitation.

The proof of this proposition, as far as it is as yet developed, rests mainly upon the testimony of the experiments of five persons. These are J. Straus, E. Scheuerlen, Geo. Klemperer, J. A. Ruys and Dr. Knapp, all of whom seem to have performed their experiments in such a manner as to thoroughly test the possibilities in a practical way. I will not analyze all of the experiments but will simply indicate the plans of experimentation, and give the general results.

J. Straus used a sterilized tube tapering to a sealed point at one end, and closed with a sterilized plug at the other, containing a sterilized irritant. The skin of the animal was sterilized with the actual cautery, stabbed with a sterilized knife, the thin end of the tube introduced, broken within the tissues, and a few drops of croton oil, or other irritant, blown out into the tissues, the tube withdrawn, and the wound sealed with the actual cautery. Of eighteen injections of turpentine, five suppurated. Of

five injections of croton oil, one suppurated. Of two injections of mercury, none suppurated. All of the cases of suppuration showed cocci in the pus, and were therefore considered as failures in obtaining perfect asepsis.

Scheuerlen's plans were better. Thin sterilized sealed tubes containing the sterilized irritant were placed under the skin with antiseptic precautions, and were allowed to remain ten days, or until the wound, through which they were introduced, had perfectly healed, and then they were broken, setting the irritant free in the tissues. A large number of experiments seem to have been made, using about a dozen irritants, among which were turpentine and croton oil. After breaking the tubes a hard swelling occurred at the spot, but no suppuration except in one case. In this one the experimenter concludes that the wound had not perfectly healed, and that cocci were in its track. Cocci were found in the pus.

Klemperer's experiments were made after the plans of Straus, and gave very similar results.

Drs. Ruys and Knapp injected croton oil and turpentine into the anterior chamber of the eyes of rabbits with antiseptic precautions. Here the effects could be seen, whitish deposits occurred which passed away after a time, but no suppuration in the larger number of cases, and in those in which pus was formed cocci were found also, showing that these had not been excluded.

The effect of these experiments certainly tends strongly to establish the proposition that without micro-organisms there is no such thing as pus formation. Farther than this the universal testimony of observers is that pus formation is confined mostly, if not entirely, to a specific form or family of micrococci, of which there are a number of species well known to mycologists. If I have read the results of experimentation aright, and observed aright (for I have also cultivated, and to a limited extent, experimented with these fungi), this species of fungi is incapable of attacking normal living tissues. In case of subdermal fracture of a bone they produce suppuration at the point of fracture if injected into the veins of the ear, but do not produce suppuration at other points of the body. A focus of inflammation seems to create their opportunity. Many other organisms may attack living tissue without the aid of an inflammatory focus, but not these.



With these facts in view Dr. Knapp asks these questions and gives these answers. "What is pus? An albuminous non-coagulable fluid containing multitudes of leucocytes. What is suppuration? The splitting of living nitrogenous tissue into simpler compounds through the influence of certain bacteria." "In this way," says he, "the parallelism of the three processes—fermentation, putrefaction and suppuration—is established."

Now while the facts seem to drive us to some such conclusion as is intended to be formulated here, the formulation certainly can not remain as it is. I have no quarrel with the separation of fermentation and putrefaction, if it be understood that the distinction is simply between the nitrogenous and non-nitrogenous forms of one process which is in every case performed by some variety of fungi—bacteria, cocci, or bacilli. These facts need no demonstration now. But how can we conclude that pus formation is a variety of these processes? Certainly not through the idea of the disruption of the elements of living tissue. We have been taught that pus production consists of a certain form of albuminous exudate in which amœboid cells are found dead, and furthermore that many of the amœboid cells that come to the front in the healing of wounds die and float away in the purulent fluid, while a large proportion become built into a wall of living tissue, and as this is perfected the formation of pus is diminished. While there is a constant loss of living cells, the cells prevail in the end in all of the ordinary suppurations. I should therefore formulate the statement thus: *Suppuration results from the fermentative disruption of inflammatory exudates through the biological processes (or through the growth) of certain forms of cocci known as pyogenic fungi.* Or, as the cause of fermentation is so well understood in these days, the formulate might be limited thus: Pus formation is the result of a specific fermentation of inflammatory exudates. The word putrefaction might be substituted for fermentation as the material contains nitrogen, but from the fact that ill smelling products, characteristic of what we regard as putrefactive changes, are not present in the first instance. From my own observation I should conclude that the production of ill smelling products in pus is in every case due to a second process of disruption (this may go on



contemporaneously), and by other germs than those that originally produce pus.

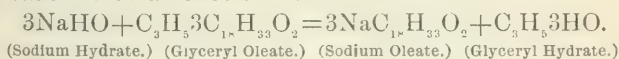
By the word inflammatory exudate here I intend to exclude the amoeboid cells though recognizing them as being included in the exudate. No other part of the exudate can be regarded as living matter. The plastic portion is formed material that lies close to the very domain of life, but is not itself living. It is the proper matrix of the amoeboid cells, which develop and go on to the formation of tissue within it. It disappears as the cells develop and form the living tissue, that finally closes the wound that has at first been sealed together by the plastic exudate. Now if this latter is disrupted, and rendered fluid, by a fermentative act, *i. e.*, a growth of pyogenic fungi, the amoeboid cells die and become pus corpuscles. In this way we come to a formulation of the steps of the process of pus formation that is at once rational, in harmony with the new facts obtained, and in accord with all of the teachings of science thus far developed, and yet without change in any of the material facts hitherto developed, except in the one idea that the formation of pus is a vital act of the tissues. According to this view, the production of pus is not a vital act of the tissue from whence it emanates, but an act of pyogenic fungi which take advantage of a definite form of opportunity.

## SOAP.

By P. J. KESTER, D. D. S., CHICAGO, ILL.

SOAP AS AN INGREDIENT OF DENTIFRICES. ABSTRACT OF A PAPER READ BEFORE THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A product as is well known of the combination of a fatty acid and an alkali with a reaction as follows:



(Sodium Hydrate.) (Glyceryl Oleate.) (Sodium Oleate.) (Glyceryl Hydrate.)

When sodium is the base the product is hard soap (as in the above equation), and where potassium is substituted the resulting compound is soft soap. Thenard gives as an analysis of French white castile soap: Fatty acids, 50.2; dry soda, 4.5; water, 45.3. Potassium and sodium soaps are readily soluble in water and alcohol, the former being more soluble than the latter.

The addition of a quantity of water to an aqueous solution

produces a precipitate, the neutral salts of stearic and margaric acids, decomposing into free alkali, and acid stearate and margarate of the alkaline bases. The latter precipitates in the form of pearly crystalline scales.

The same decomposition occurs when hot dilute solutions of soap are cooled.

According to Chevreuil, who has investigated this decomposition in the stearate of potassium, when a solution of this neutral salt is cooled, one-fourth of its potassium remains in solution, and a mixture of neutral, with acid stearate of potassium is separated. If the same salt is dissolved in 5,000 parts of cold water, the acid stearate is alone precipitated, and half of the potash remains in solution.

The occurrence of these decompositions which ensue equally with the margarates and oleates of potassium and sodium, as with the stearates, afford an explanation of the appearance of the whitish turbidity always produced even in the purest water, and also show that the alkalinity of soap suds is solely due to the liberation of caustic potassium or sodium which fact accounts for the possibility of removing fatty impurities in water.

Such is a brief summary of the chemical properties of soap.

That it is an excellent substance to assist in the removal of fatty matters from textile and other materials is evident, but there is a use to which soap is put that I beg to call your attention briefly, and that is its use as a dentifrice, or as one of its ingredients.

Nearly every drug store displays one or more saponaceous tooth powders, pastes or tooth soaps, and many patients present themselves, whose teeth bear evidence that their owners "use nothing but a little white castile soap" on them.

Its power to cleanse might commend it, did it not contain some properties that are questionable, if not dangerous.

1st. All soaps contain an excess of alkali and we know that some of the most persistent and destructive varieties of decay are found in the mouths of patients whose saliva contains an excess of alkaline salts, and when the saliva is abnormally alkaline, it is found to contain, according to Wright, Lehmann et al., an excess of sodium salts.

When it is remembered that the alkali of hard soap (and this

is the variety found in tooth powder, soaps, etc.), is sodium, it may not seem so strange to draw a parallel between abnormal alkalinity of the saliva due to constitutional causes and that produced by soap introduced into the mouth as a dentifrice.

2d. That the stearates, margarates and oleates, the alkaline bases, are never dissolved in cold water without decomposition, the neutral salts being resolved into free alkali, and into an acid salt which is precipitated.

It is noted that by this decomposition one-fourth of the alkali remains in solution, and this added to the free alkali contained in the soap would be of sufficient quantity to destroy the gum and possibly the organic portion or matrix of the enamel itself. That it does affect the former we have abundant evidence in the fact that the gums of those using soap as a dentifrice are destroyed to such an extent that the necks of the teeth are exposed and the septa between the teeth are wanting.

That the organic portion of the enamel is affected is manifest by the peculiar yellow color of it, which is so characteristic that some gentlemen of my near acquaintance assert that they can invariably discern when a patient has used soap on his teeth for any considerable length of time.

And again we notice that by the decomposition of soap, there is a certain amount of the acid stearate formed which is precipitated, this being deposited upon the smooth clean surfaces of the teeth, may there not be sufficient energy in this acid salt to slowly act upon the calcium salts of the tooth substance itself, thus accounting for those cavities which we find at the margin of the gums where we know soap to have been used.

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#### PPOF. BROPHY'S CLINIC ON ORAL SURGERY.

REPORTED BY J. R. PAGIN, OF SENIOR CLASS.

Mrs. F. L. S., age 29. This patient informs me that about three months ago, her right lower wisdom tooth was broken off in an attempt to extract it. The root remaining in its socket became the seat of an alveolar abscess. Since the formation of this abscess the pus has made its appearance in several different places. It first appeared as the usual form of abscess, the pus discharging through the external alveolar plate. Subsequently

it discharged through the internal plate. Finally the pus passed around the inferior border of the jaw and gravitated down the neck to a point just above the clavicle, where, after a considerable quantity had accumulated, it was evacuated by the lancet of a physician, who failed to discover its source. This opening finally healed, and I find the pus to-day discharging into the mouth just opposite the angle of the jaw. This affection might result in serious complications if not properly treated. An inflammatory process thus established may result in necrosis of a portion of the jaw. It may produce caries of the jaw in proximity to the root. From pressure upon the inferior dental nerve it not infrequently produces extreme neuralgic pains, and even paralysis of that nerve. It may, when extreme inflammation occurs, produce ankylosis of temporo-maxillary articulation. The course to adopt in treating the case is expressed in three words, *remove the cause*.

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## PROCEEDINGS OF SOCIETIES.

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### CENTRAL ILLINOIS DENTAL SOCIETY.

PEORIA, OCTOBER 12, 13 AND 14, 1886.

(Concluded from page 203.)

REMEDIES, OLD AND NEW. DR. GEO. D. SITHERWOOD, BLOOMINGTON ILL.

The remedies most sought by dentists at present, are the best *Antiseptics*, *Germicides* and local *Anæsthetics*, or pain obtunders.

*Antiseptics* are substances which have the power of checking the development of the organisms of putrefaction, but not of destroying with certainty disease-germs. The most important of these substances are alcohol, sulphate of iron, and borax.

*Germicides* have the power of destroying disease-germs. All germicidal agents are also antiseptic, but the antiseptics proper are not germicidal. The most important of the germicides are chlorine, and substances containing it: corrosive sublimate, and permanganate of potassium. Carbolic acid, salicylic acid and iodoform, although useful for the dressing of wounds, are of very little value as germicides away from the body.

No department of the whole province of pharmacology has



been more thoroughly and successfully studied during the last two years, than that of local anæsthesia.

The discovery of the now famous anæsthetic property of cocaine, has furnished the praiseworthy stimulus to the efforts which have been put forward in search of the same property in other therapeutic agents. And the strangest feature of this whole investigation exists in the fact, that none of the substances which have been shown to possess the power of local anæsthesia, are of recent discovery, but all were believed to have their well-defined places in the works of *materia medica*, and some of them were known to the profession for hundreds of years.

#### THE LOCAL ANÆSTHETIC ACTION OF BRUCINE AND THEINE.

Brucine is the alkaloid contained in the seeds of *strychnos nux vomica*, and although its action never obtained much scientific investigation, it was always taken for granted that, like its twin sister, strychnine, it almost exclusively affected the motor division of the spinal nervous system; yet experimental and clinical data render it very certain that either a notable difference exists between the action of these two agents, or that all our physiological and clinical knowledge of the action of strychnine rests upon an insecure foundation.

But one of the most remarkable of all the local analgesics which has been before the profession, is *Theine*, the alkaloid of Chinese tea. Attention was first [drawn to this agent by Dr. Mays, of Philadelphia, in an article on "The Physiological and Therapeutic Action of Caffeine, Theine, and Guarine."

It was shown from experiments made on frogs, that theine paralyzes the nerves of sensation, and this impairment of sensibility proceeds from the center to the periphery, and not like that of brucine, from the periphery to the center.

Among the extraordinary features of theine is its localized anæsthesia below the seat of injection. There can be no question about its general absorption; but there has occurred no evidence in the experience of its use to show that it produces any systemic disturbance, even in maximum doses. Its absorption and distribution by the blood probably play a secondary role, for it seems to exert its influence on the trunk of the nerve, at the point of its injection, and then to distribute itself downward along its course

in spite of these functions. This localized action of theine naturally gives it an immense advantage over morphine, atropine chloral, and other agents of that class, which principally act by intoxicating the central nervous system.

The leaf of Chinese tea has formed a domestic drink for many centuries, and its alkaloid, theine, has been known for nearly three-score years; yet no one suspected that it contained an analgesic action more remarkable than that of cocaine.

Brucine was isolated in 1819, and until the experiments of Dr. Mays, its action was regarded as being analogous to that of strychnine.

Evidence from various sources convince us that these two remedies have a wide scope of application, in the therapeutic relief of pain in dental surgery.

*Kawa Resin.*—Kawa, the resin obtained by Lewin from the root of *piper methysticum*, is still attracting considerable attention, and promises to become almost as valuable, provided it can be readily handled, as cocaine.

DR. N. A. RANDOLPH obtained results which in the main confirm those of Dr. Lewin, although the effects in his hands were not quite as marked as reported by Lewin. Dr. Randolph suggests the name *Lewinin* for this resin, instead of the term *Alpha Kawa Resin*, proposed by Lewin, who discovered it. The resin is a semi-fluid body, with a peculiar aromatic taste, pungent and hot like pepper; when placed upon the tongue there is a momentary burning sensation, with increased salivary secretion, followed by local numbness, which may last for more than an hour. It increases the salivary secretion and produces loss of sensitiveness immediately, or shortly after application on all parts of the body. Its use and value in dental practice at once suggests itself.

An alcoholic solution applied by the mouth or subcutaneously, produces a deep sleep within a few minutes, which clearly demonstrates that in Kawa we have to deal with a drug of a most energetic activity, and that its power to produce complete local ischemia and anæsthesia, reduction of the excitability of the spinal motor apparatus, and besides psychical quiescence can be unquestionably utilized in therapeutics.

*Cocaine.*—The local anæsthetic properties of this alkaloid are established by the testimony of thousands. So much has been

written upon it, that it seems impossible to add anything new, or to say anything that is not generally known on the subject.

The most recent and satisfactory manner of using cocaine as a pain obtunder to sensitive dentine is that recommended by Wilhelm Herbst. The formula is simply without weight or measure, a saturated solution of sulphuric acid and crystals of cocaine (Prof. Taft uses 1 dr. sulphuric acid and 30 grs. crystals of cocaine) to which is added sulphuric ether until supersaturated. The effect is nearly perfect, but as it only obtunds one layer it must be frequently renewed. It may here be remarked that dilute acids do not alter cocaine, but concentrated acids (sulphuric, etc.) change it into ecgonin, benzoic acid, and methyl alcohol, or rather the ether of the latter. Ecgonin is a product of the decomposition of cocaine, and not a natural constituent of coca leaves. Merck states that he hopes to be able ere long to report on the physiological action of ecgonin.

#### HYDRONAPHTHOL AND THE POTASSIO-MERCURIC IODIDE.

The following are the claims made for the newly discovered *Antiseptic*, Hydronaphthol, by R. J. Levis, M.D.

It is at least twelve times as effective as carbolic acid, and is entitled as a true antiseptic to occupy a position in the comparative tables next to the mercuric bichloride. It is thirty times as potent as salicylic acid, sixty times as effectual as boric acid, and has six hundred times the antiseptic power of alcohol.

Hydronaphthol is soluble when placed in cold water to the extent of one part in 1100. It is soluble in hot water in the proportion of one to one hundred; but when the water becomes cooled to ordinary temperatures, a precipitate occurs, leaving a solution of one to one thousand. In this strength of one to one thousand it permanently prevents the development of the germs of putrefaction in all putrescible fluids.

Whilst the true antiseptic or inhibitory action of Hydronaphthol in such cold aqueous saturated solution is perfect, its germicidal and proper disinfectant power is ineffective. For the destruction of already existing germs, such as have a tenacious vitality, as those of anthrax bacilli and pathogenic micrococci, it, therefore, can not be relied on. As to its action in this regard, as compared with carbolic acid, it should be remembered that a

ten per cent. carbolic solution is required, a strength practically improper in wound treatment. In ordinary antiseptic practice carbolic acid is valuable only on account of its inhibitory action.

The first use of Hydronaphthol as an antiseptic was by Dr. G. R. Fowler, of Brooklyn, to whom the profession is indebted for its introduction to practical surgery. It is a grayish substance in the form of crystalline lamina, having a slightly aromatic taste and odor. It is soluble freely in alcohol, ether, chloroform, glycerine, benzole, and the fixed oils. In the aqueous saturated solution of one to a thousand it is absolutely unirritating, and has no toxic action, either local or systemic; is free from unpleasant odor, and has no injurious action on metallic instruments or on cloth fabrics. Besides its use in aqueous solution, Dr. Levis has used it in the form of a powder, diluted, preferably, with the oxide of zinc in the proportion of one to fifty, and he believes that Hydronaphthol may well displace carbolic acid from practical surgery.

The potassio-mercuric iodide is four or five times as powerful as a true germicide or disinfectant, as the mercuric bichloride. For such use it is effective in aqueous solutions in the proportion of one to twelve thousand.

The potassio-mercuric iodide is made by simply dissolving equal quantities of the biniodide of mercury and the iodide of potassium in distilled water. The solution is evaporated and there remain yellow, needle-like crystals of the potassio-mercuric iodide.

In the use of such dilutions of this powerful antiseptic, local irritation is entirely avoided, and the risk of producing the constitutional effects of mercury is greatly diminished.

The introduction into dento-surgical treatment of these two remarkable and powerful substances, will do much to overcome some of the objections and inconveniences of antiseptic practice.

#### EUCALYPTUS GLOBULUS.

If extensive applicability and promptness of action, are a criterion of a standard remedy, then the preparations of eucalyptus globulus have an unquestionable claim. There can be no doubt as to the medicinal virtues of eucalyptus, when we consider that the tree itself, in its natural state, medicates by its powerful antiseptic properties a wide zone encircling its habitation.



In France, five different preparations are in use, viz., 1. A tincture made by an alcoholic maceration of the fresh leaves. 2. A tincture obtained from the dry leaves by the same process. 3. An alcoholic extract. 4. A wine. 5. A liniment prepared from the essence.

In America, the most thoroughly reliable preparation in dental practice is the volatile extract made by Sander & Sons, of Australia. The antiseptic properties of this preparation of eucalyptus in the treatment of and as a dressing for alveolar abscess, is much superior to eugenol. The fact that eucalyptus, like balsams and essences, impregnates the mucous membranes in particular, suggests at once the utility to be derived from the drug in all inflammatory conditions of the mouth.

#### BORIC ACID.

Nothing, according to Dr. McGregor, is at once so rapid and so efficient in the treatment of parasitic stomatitis or thrush, as this remedy. The youngest children do not object to its application. The *oidium albicans* quickly succumbs to its influence. For thrush in children he especially recommends boric acid, either as a mouth pigment or as a confection. As an antiseptic ingredient in tooth powder nothing can displace boric acid.

#### DISCUSSION.

DR. BROPHY said that hydronaphthol, eugenol and eucalyptol are excellent remedies. In his practice, however, he prefers boracic acid and iodoform as an antiseptic dressing. He calls especial attention to the need for care and cleanliness of hands and instruments, and advised the frequent use of antiseptic washes and soaps. The pulp canal instruments especially require thorough care in this regard. Peridental inflammation is often produced by neglecting this latter point.

DR. OTTOFY thought the line of distinction between antiseptics and germicides was a difficult one to draw, as many remedies are antiseptic and yet not germicides.

DR. TAYLOR inquired the difference?

DR. OTTOFY replied that a germicide produces certain death; it is a destroyer of bacteria or any germ so far as known to us; whereas an antiseptic merely arrests or retards their growth and increase for the time being; thus alcohol has antiseptic qualities, but not germicidal, as, in fact, some germs flourish in it.

DR. TIBBETS said the distinction between antiseptics and disinfectants is far more easily drawn, as the latter are simply the concealers of what does really exist, while the former arrest putrefaction.

DR. BROPHY said that antiseptics prevent fermentation and putrefaction, whereas disinfectants destroy odors, but do not prevent putrefaction.

Subject passed.

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### INTERNATIONAL DENTAL CONGRESS.

A conference of dentists who were in attendance at the eighteenth anniversary of the First District Society of New York, was called at the Sturtevant House, to consider the feasibility and advisability of taking steps for the calling of an international dental congress at some future date. Thirty-five dentists were in attendance; among whom were Drs. Northrop, Dwinelle, Littig, Walker, Perry, Carr, Kingsley and Mills, of New York City; Keech, Coyle, Winder and Waters, of Baltimore; Hunt, of Washington; Darby, Truman and Peirce, of Philadelphia; Brophy and Harlan, of Chicago; Shumway, of Massachusetts; W. P. Dickinson, of Dubuque; Watkins, Meeker, Brown, Levy and others, of New Jersey; Bartholomew, of Springfield, Mass., and others whose names escaped the secretary.

The meeting was called to order and elected Dr. W. H. Dwinelle, chairman, and Dr. Geo. A. Mills, secretary.

Dr. Kingsley opened the discussion by some remarks, in which he considered the advisability of taking steps for organizing a meeting, to be called an International Dental Congress, and he offered the following resolution:

*Resolved*, That in the opinion of the conference, the interests of the dental profession throughout the world will be advanced by an International Dental Congress.

A discussion then followed, in which Drs. Northrop, James Truman, Brophy, Hunt, Winder, Keech, Kingsley and the chairman took part. There was no difference of opinion as to the advisability of holding such a congress at some future time, and the years 1888, 1889 and 1891 were severally suggested and considered. The year 1890 was out of the question, because of another International Medical Congress to be held in that year.

As to the time, no decision was reached. The resolution was carried unanimously. A second resolution was offered, viz.:

*Resolved*, That the following named gentlemen constitute a committee of temporary organization, whose duty it shall be to make such a plan for a permanent organization as shall in their estimation best call out universal support.

This was also discussed and carried. The committee named is Drs. Dwinelle, Northrop, Walker, Kingsley, Winder, Hunt, Coyle, Brophy, Levy, Meeker, Southworth, Frank French, Truman, Peirce and Flaggs.

A third resolution was offered and carried, viz.:

*Resolved*, That this committee be empowered to fill vacancies and enlarge its number at their discretion.

This conference was amicable in a large sense, yet there was a free interchange of opinion. While all did not think alike in all things, wise measures were strongly advocated, so that it should not appear that there was any disposition to place obstructions in the way of any movement that sought the best good of all.

The meeting adjourned subject to the call of the chair.

GEO. A. MILLS, Secretary of Conference.

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Our partiality for the *Chemist and Druggist* must be apparent to many readers, as this is the third time in our short history, that we have sought inspiration from a perusal of its columns. Here is an answer to a query by J. E. M., taken from a late number: "Ordinary silver coins filed down make, with an equal weight of mercury, a good AMALGAM FOR FILING TEETH. The most common one is composed of copper 3 parts, mercury 7 parts. The copper is precipitated from the sulphate by means of scraps of iron. Wash it well, dry, and keep in a well-stoppered bottle. The amalgam is made under hot water, the copper first being damped with mercurous nitrate solution." To have a metallurgical question settled so definitely, and by such simple methods, is very refreshing!

The Mississippi Valley Association of Dental Surgeons elected the following officers for the ensuing year: President, A. W. Harlan, Chicago; first vice-president, W. N. Morrison, St. Louis; second vice-president, M. H. Fletcher, Cincinnati; corresponding secretary, F. W. Sage, Cincinnati; recording secretary, A. G. Rose, Cincinnati; treasurer, Frank A. Hunter, Cincinnati. Executive Committee—C. M. Wright, Cincinnati, H. J. McKellops, St. Louis, J. R. Callahan, Hillsboro, O. Publication Committee—E. G. Betty, Cincinnati, W. H. Sillito, Xenia, A. G. Rose, Cincinnati. Membership—H. L. Moore, Cincinnati, M. Stout, Chicago, A. O. Rawls, Lexington, Ky. Ethics—O. N. Heise, Cincinnati, Chas. J. Keely, Hamilton, O., Wm. Van Antwerp, Mt. Sterling, Ky. The next meeting will be held in Cincinnati the first Wednesday in March, 1888, in the lecture room of the Ohio College of Dental Surgery.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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## CRITICISM.

A correspondent in Minnesota has written us the following letter about the editorial and other comments, on the late meeting of the American Dental Association, which have appeared in our various exchanges since the close of the meeting. We publish it entire:

*To the Editor of the Dental Review:*

SIR: I think it high time for some one to sit down on editors and others who criticise the actions of dentists at their meetings, particularly the last meeting of the American Dental Association. One sees so much written and copied about that meeting, that it would be well in the future to exclude reporters, who come merely for newsy gossip. Suppose it is a rehash of old matter, what of it? If old to you old wisecracks (he don't mean us, of course), that same matter will find a welcome somewhere. Some workers out West will appreciate some one thing reported as to the private affairs after the official meeting. Who has a right to attack that? Moreover, a reason may be given why more original matter is not offered, which is the dread of a roasting from the smart editor (!), who wishes in his turn to say something new or smart, by guying the writer or reader of a paper, whichever he is. The profession catches it, as a rule, except a favored few (editors, also). Many a bright idea has originated in the brains of some men, who can not write or talk well. Let us



have done with roasting and guying, and get all the light we can, and brighten up the "diamonds in the rough," and we shall have plenty of new things to study and think about.

Yours respectfully,

E. H. STANLEY.

We do not know whether the writer of the above was present at the late meeting referred to or not. Had he been present he might have discovered that one of the causes, which was a hindrance to the success of the meeting, was the number of other meetings in session at the same time. To have a successful meeting of any association, interest must not be divided. We had, at Niagara Falls, the association of Dental Examiners, the Dental Faculties Convention, and the meeting of officers and council of the Dental Section of the International Medical Congress, and the exhibits of dealers and manufacturers, and several other attractions. There were too many interests represented to allow of concentration of thought during the reading of papers, and in consequence the discussions were meagre, indeed. So far as the papers are concerned, collectively, we believe that they were fully as valuable as any that have been presented to the association since the establishment of sections. Before that period, there was some incentive to present a paper, and in many cases they were of great value; but now, who cares to prepare a paper and have it considered by a Section composed of gentlemen, many of whom do not expect to be present at future meetings, and who have no interest in the future of the Section? The American Dental Association is, and will continue to be, too small for years to come, to divide its work into Sections. The experience of the years that have passed proves this, and we believe that it will continue to be criticised by "editors" and others until a new method of presenting scientific matter for discussion is adopted. One of the nuisances that we could do away with would be to invite other associations and conferences to hold their meetings either before or after the meeting of the A. D. A., in order that the attention of members would not be taken up by thoughts of other matters. If the association is irrevocably wedded to Sections, it would be well for the various chairmen to appoint a member to open the discussion on the papers read by the Section. By so doing, this might bring out a

good discussion. Another suggestion we would make, is that the presiding officer should keep speakers to the subject under discussion, and should stop them instanter when they begin to relate the history of a "case." Many valuable discussions have been closed for no other reason than that some one with a microscopic idea has felt impelled to give the history of a "case." In local meetings this is all right and commendable, but in a representative body it is not. At a future time we will speak of this subject from other standpoints.

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### THE AMERICAN DENTAL ASSOCIATION.

During the past summer we paid a visit to Asheville, N. C., the next place of meeting of the A. D. A. Many of our Southern brethren had portrayed the beauties of the region in which Asheville is located, always dwelling on the fact that the temperature in the summer was equable and just as delightful as we could find anywhere in the North. We were not disappointed in its situation, the temperature or the grandeur of the scenery. During the days spent in Asheville the thermometer ranged between 61° F. in the early morning to 78° F. all day long. Many days the records showed that from seventy-one to seventy-five was the average in the shade. There was not a single day when we were uncomfortable, either in the saddle, on foot or lounging around the grounds of the Battery Park Hotel. We conclude from this visit that it will be a pleasant place to sojourn in for a week or longer. It is not difficult of access from anywhere. We can leave New York, St. Louis or Chicago in the morning and arrive in Asheville the next afternoon in comfortable Pullman cars, and have good eating houses all the way. It will not be expensive, as arrangements are being made to get the lowest rates from all points. Ordinary excursion round trip tickets are very low all the year round, as Asheville is both a winter and a summer resort. The hotel accommodations are good. The Battery Park Hotel can entertain about 500. The Swannanoa, about 300. The Eagle, 200. The Grand Central, 200, and there are four or five other hotels having a capacity of from 50 to 100. In addition to the above, there are about 60 good boarding houses, some of the first-class, small parties and families of members can secure quarters

with board for about \$8.00 to \$12.00 per week. Horse-back riding is the great feature of Asheville, as there are many mountains in every direction to be explored for pleasure and for the purpose of viewing nature in her own garb. The French Broad river and the Swannanoa meet at Asheville, and there are many delightful drives on their banks. The town is irregular and is spread over a good deal of territory, so that the pedestrian will have ample opportunity for exercise during the hours between sessions. There are many places of interest to visit within easy distance by rail, and the trains are run with observation cars so that every one may enjoy himself to the utmost. We hope to see a large turnout of our members to this next meeting, feeling sure that no one visiting Asheville will be sorry for it. Will you go?

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#### A METHOD OF FILLING VERY FINE ROOT CANALS.

The small labial canals of the upper molars, and of double-rooted bicuspid are rarely diseased, and if they are once thoroughly filled are almost certain to remain healthy. As for various reasons it is difficult to fill these and other fine canals thoroughly with gutta-percha cones, the following method may be successfully employed. For the purpose of removing the dead pulp tissue, for carrying in the disinfectant fluid and for the subsequent drying of the canal, a very fine Swiss or piano wire broach, wrapped with a few fibers of cotton, must be used.

The canal being in the condition for filling, the gutta-percha solution should be worked into it with the same broach which was used in its preparation.

A piece of gold wire finely tapered to fit the canal approximately should then be carried in the foil pliers to the opening in the canal, this opening will be easily found by gently feeling about with the point of the wire in the proper locality. Having previously been cut to the proper length it can be gently pushed in until it and the solution of gutta-percha have completely filled the canal. A large, curved, and deeply serrated plugger will be found useful in pressing the tapered wire home. The tapered wire points should be made of different sized 18 carat gold-wire filed down to a fine gradual taper and cut off in various lengths. In selecting a wire point for any given case, the size and shape of the broach used in the preparation of the canal, should be the guide.



## INTERNATIONAL TOOTH CROWN CO. vs. C. M. RICHMOND ET AL.

According to the decision of Judge Wallace, "In the Circuit Court of the United States for the Southern District of New York," the Low method of bridge-work is held to be valid, inasmuch as the bridge is held in place by a band cemented to a natural tooth at either end of the denture. The Richmond telescope, or gold crown, for adjustment on a natural root, with or without a porcelain face, was held not to be patentable on account of its abandonment to the profession, for more than two years, before application was made for a patent, and for other reasons. It was shown by the evidence in the case, that the use of gold crowns had long preceded the application for a patent. We presume a copy of the decision in full can be obtained by addressing Dr. A. L. Northrop or Dr. Wm. Carr of New York city.

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## PRIZE ESSAYS.

The executive committee of the Mississippi Valley Association of Dental Surgeons has been authorized to award the sum of twenty-five dollars in gold for the best essay on: "The causes of deposits on the teeth, and methods of removing the same." Competitors must send their essays to Dr. C. M. Wright, chairman of the committee, 266 West 7th Street, Cincinnati, Ohio, on or before February 1, 1888. The essay must be read by the author at the next meeting of the association (first Wednesday in March, 1888). The competition is open to the entire world. The essay should be accompanied with the name and address of the author, so that the successful competitor may be notified in time to be present at the meeting. We sincerely hope that a number of essays will be written, founded on original investigation, and let the best one win.

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## A DANGEROUS TENDENCY.

Any careful observer will have noticed that operative dentistry as now practiced in the United States, is threatened with retrogression and decay; this note of warning is sounded in behalf of the protection of the art, to which in America tooth-filling has been developed by the skillful manipulation of gold. A dan-



gerous preference has been created by dentists among a large class of people in favor of using plastic materials for filling, which if continued will eventually injure the profession by dragging it below the level which it occupies in countries, where the use of plastics is the rule. No one is justified in recommending the use of plastics for such reasons as a lack of skill, want of time, expense, etc., for these excuses can not be successfully sustained. With the improvement in instruments and other appliances at the present time, the lengthy operations of former days have been reduced to a very considerable degree. Many cavities now filled with amalgam and other plastics, can be filled with gold in but slight additional time and with only a very minute increase of expense. The radical measure to secure the greatest amount of permanent benefit, to our patients, consists in consigning to the past, the wholesale recommendation of plastics, but instead to reduce the fee for gold work and increase the charges for plastics, until the two almost meet, and in many instances gold will be readily preferred. Teach the honest maxim: That gold is best, and the best is the cheapest, that the exercise of the dentist's art requires a higher skill than the potter's, and a greater genius than the molder's.

It may be readily admitted that there is yet much to learn about the use of gold, and that it is not the *ne plus ultra*, for that—in the language of the greater—"still lingers within the hidden recesses of man's inventive genius." We contend that gold is used too seldom and the plastics too often, and we admonish the many with whom this practice has become a rule, to change their course, elevate the profession, and thus increase the benefits to be derived from the intelligent practice of dentistry.

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## DOMESTIC CORRESPONDENCE.

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### LETTER FROM NEW YORK.

*To the Editor of the Dental Review:*

SIR:—The First District Society turned out *en masse* to-day, not only at the exciting meeting in the evening, but also at the afternoon clinic.

The interest at the clinic seemed to center around the chair

of Dr. Geo. W. Melotte, of Ithaca. He exhibited a compound blow-pipe, the idea being evidently copied from the beautiful blow-pipe recently shown by Dr. J. R. Knapp, of New Orleans. The one shown to-day has the merit of being much less expensive, but it certainly lacks the chief quality of the Knapp blow-pipe, viz: *delicacy of manipulation*. Dr. Melotte also exhibited two new forms of clamps for holding teeth while soldering. One of them, while grasping the teeth firmly, had a revolving disc, which was especially designed for contouring.

Dr. Watkins, of Montclair, N. J., brought for advice a case of irregularity. A boy, aged 12, where the inferior centrals projected beyond the superior teeth.

Dr. John M. Crowell, of New York, demonstrated his new fusible body for continuous gum work. He readily fused with the blow-pipe by placing the tooth or substance on which the fusing is to be done, in a small muffle of specially prepared clay. It took but a few moments for him to fuse body over the platinum pins, lying over palatine surface of one of Dr. E. P. Brown's central incisors for a bridge. He then showed his ability to fuse it over *gold*, by coating one of Dr. Ryneear's *gold* (bicuspid) crowns, with a porcelain finish. How strong this body is which he can fuse over gold, is a matter to be demonstrated.

Dr. Starr, of the S. S. White Dental Manufacturing Company, presented an entirely new method of lining rubber plates with gold. He used a foil, one side of which was gold and the other side of silver. The gold side is covered with varnish and pasted over the plaster model, the rubber being then vulcanized over the silver. He stated that the silver was oxydized, making the gold such an important factor of the rubber that it could only be removed by grinding away the superficial part of the rubber.

Dr. Robinson, of Brooklyn, presented a lady 25 years of age, with a necrosed socket of the superior central incisor. A free use of the bur was recommended.

Dr. Oliver presented another new obtundent, but as he refuses to give its constituents, we can not judge of its value.

Dr. Reese, of Brooklyn, presented a gentleman wearing an entire upper bridge made of "Reese's Metal." It was sup-

ported on the canine roots, and by caps over the last molar on either side. It smelled, *but not sweetly*.

Dr. G. A. Mills, of New York, presented a regulating case in the course of progress.

Besides the above there were various other exhibitions which are getting to be a bore by being exhibited monthly.

The meeting room in the evening was so densely crowded, and the ventilation so bad that, like the writer, many of the attendants are suffering in consequence. It is absolutely necessary for the Society to move to more commodious quarters. There were two papers read. One by Dr. G. W. Melotte, entitled "Methods Involved in the Construction of Crown and Bridge Work." Dr. M. had some gigantic models, by means of which he went over the ground from A to Z, of inserting a bridge which the U. S. Court has just held to be an infringement of the Low patent. There is one point for the future bridge inventors to solve, viz: How to make a tight fitting cap over a live molar or bicuspid without removing nearly all of the enamel?

The other paper, "The Teeth of the Basket Makers," was by Dr. J. Howard Reed, a member of the Society. It was short and well written: two points of great merit. He described very minutely the characteristics of a gypsy tribe of people occupying a range of hills about four miles west of the Hudson, near Kingston. Neither of the papers were discussed to any extent, for every one was impatient to hear from S. C. Gordon, Esq., of counsel in the Richmond and Gaylord suits. It was near ten o'clock when he and Dr. Northrop, fresh from the banquet hall, arrived. Mr. Gordon then proceeded to inform the members that the Richmond patents had been declared invalid, but that the court had sustained the Low patent for bridgework in such broad terms, that any one using either a band or a cap on one of the piers of the bridge, would be an infringer of the patent. Crowns of this nature can be used without fear, but a bridge constructed on this principle renders one liable to an injunction.

Mr. Gordon then said he had no doubt that in the further course of litigation the Low patent would be also declared invalid. The sinews of war were, however, lacking. A vigorous effort was at once put forth to raise a sufficient amount of money to push on the fight. If every dentist in the country would con-

tribute to this fund, the profession would soon be rid of what threatens just at present to be a rather heavy load for many of us. Contributions to this fund will be gladly acknowledged by either Dr. A. L. Northrop or Dr. Wm. Carr, President of the First District Society. Boston has already sent in a contribution, but what is needed is help from every dentist in the United States. So far the expenses of this litigation of over two years' standing, has been borne principally by a few men, who never use bridge work at all. It is necessary now for us all to chip in together, until the Low patent also is declared invalid.

“VERITAS.”

NEW YORK. March 1, 1887.

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#### LETTER FROM DETROIT.

*To the Editor of the Dental Review:*

DEAR SIR:—In reply to yours of recent date, I will describe one of the recent operations out of the common every day programme. It was an operation under the head of crown work, this being such a new thing! you know, I thought would tell the readers of the REVIEW about it.

A rather handsome young lady, tall in figure, with quite a large mouth and prominent gums and teeth, an aspirant for elocutionary honors, and without exception a handsome set of teeth. A first bicuspid on the left side in the upper jaw in an attempt at filling at some previous time had the outer cusp broken away entirely, then its contour was partially restored in gold, giving a worse appearance than if the restoration had been complete and properly finished, but on the contrary it was rough and poorly finished, and was a continual source of annoyance to the young lady, and like the poor, ever present. She had acquired the habit of trying to conceal the defect in talking, and particularly in laughing, until her laugh was decidedly a one sided affair. A good plaster impression was obtained from which a model was made, and on the palatine and both proximal surfaces extending just a little beyond the center of the tooth the plaster was trimmed back, say about the thirty-second of an inch, or what would just about represent the free portion of the gum around the tooth. Then a



die and counter die was made and cap struck up of platinum to fit the palatine cusp of the tooth, covering just about half of the tooth and extending under the gum; then a narrower strip was fitted on the opposite side or labial portion of the tooth, also extending under the gum, and lapping on the cap in position. When this narrow band or strip had been carefully fitted, both were removed and one end soldered to the cap, where the lap came; when they were again placed upon the tooth and the other end carefully worked up tight where the other lap came and held firmly in position with one hand, while with a sharp pointed instrument the lap is marked; then it was removed and the lap passed slightly past the mark and soldered, thus making it very tight on the tooth; now this was replaced again upon the tooth and with a rather coarse stone, sufficient was ground from the labial portion down to, or rather up to, and slightly under the gum to receive one of Land's facings. In this grinding process part of the projecting metal on the labial side of the tooth would be ground with the tooth, and while yet in position a thin plate of platinum is laid on this ground surface and nicely burnished over the edges of the metal (the cap and narrow strip), when again the whole is removed and this plate soldered to the other portion, thus making a perfectly tight thimble which fits quite tightly to the tooth; with the thimble in position on the tooth an impression is taken and the thimble removed and placed in position in the impression, from which a model is produced—an exact fac-simile of the mouth with the thimble in position. Now to the model the exact adjustment of the porcelain veneer is accomplished and having previously soldered a little loop at some convenient point, body is packed in between the porcelain veneer and under the loop and then baked in Land's gas furnace; when complete the whole was cemented to the tooth. This makes a very finished piece of work, and in this particular case the young lady on first looking at it actually put her finger upon one of the natural teeth so complete was the deception. I neglected to mention that the tooth had a living pulp.

M.

## FOREIGN CORRESPONDENCE.

## LETTER FROM SWEDEN.

## THE CONDITION OF DENTISTRY IN SWEDEN.

*To the Editor of the Dental Review:*

The science of dentistry, as the youngest branch of the medical family, has been in the past and is even at the present day, the one most neglected of all the specialties. The cause of this may be traced to the inferior education of those who formed the greater part of the ranks of our profession. I shall not revert to the time, when in Sweden the aim of the dentist consisted merely in inserting artificial substitutes and when his skill was not even adequate for this purpose. A period came when at least an elementary education was expected of the dentist, at a time when the practice of dentistry was a monopoly in the control of the older members of the profession, who then possessed the privilege to practice, even though only few of them were qualified.

Finding, however, that the elevation of dentistry required a proper foundation, some of the members of the Swedish Dental Association concluded to lay a corner-stone of scientific study upon which to build a superstructure of dental education. As a matter of necessity the first step in this direction was taken in 1878, the requirement of passing a preliminary examination was made obligatory upon those who commenced the study of dentistry. Thus Sweden is one of the few countries where the standard of requirement is high; nevertheless since the necessity of a preliminary examination, the number of students has steadily increased. As there are in Sweden no schools or dental departments where an entire education may be completed, students receive education in the mechanical branches, from private tutors and in private offices; after having completed two years of study in this manner, the candidate is subjected to an oral examination in chemistry, physics, metallurgy, etc., and to a practical examination comprising the manipulation of the metals and plastics in prosthetic dentistry.

Having successfully passed such an examination the candidate receives employment as an assistant, in the office of his preceptor, whenever such a course is possible, and during this period his

theoretical studies, comprising the dissection of head and neck, lectures by private tutors, on physiology, pathology, surgery, materia medica, etc., and attendance on clinics at the policlinic of oral and dental surgery, erected and maintained for this purpose by the Swedish state authorities. This course comprises two years and includes in addition to the practical instruction, demonstrations, lectures on operative dentistry, the making of obturators and other appliances. Upon completing this course the candidate is subjected to a final examination before a board of examiners, consisting of a professor of surgery, a professor of anatomy, and a dental practitioner. The latter examines the candidate in all the practical branches of dentistry, which examination is made partly at his office and partly at the policlinic, and comprises the making of one metal plate, one vegetable base plate, one gold plate with clasps and suction chamber, fillings of gold, amalgam and other plastics, conservative treatment of the pulp, antiseptic treatment of decay and the treatment of other diseases of the mouth. The examinations before the professors of anatomy and surgery are entirely oral.

No diploma or title is granted to the successful candidate, as the holding of a philosophical or medical degree is only recognized, hence some of the younger members of the profession visit the United States and there obtain the doctor-title, which is prized so highly by many, and which seems to be the principal object of the journey.

From the outline of study as described in this letter, it will be observed that the requirements for practitioners in Sweden is by no means inferior, but that on the contrary much is expected of him who wishes to practice dentistry in this country.

Yours very truly,

RUDOLF SKOGSBORG.

STOCKHOLM, Jan. 21, 1887.

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LETTER FROM SWITZERLAND.

*To the Editor of the Dental Review:*

DEAR SIR:—The past year was a very important epoch in dentistry of Switzerland, made memorable by the organization and the holding of the first session of a National Dental Society. The organization was accomplished in March, at Frauenfeld, and

the first session was held at Berne on October 30th, at which session the following officers were elected: President, Prof. Dr. Billeter, of Zürich; Vice-President, Prof. Dr. Redard, of Geneva; Secretaries, Mr. Wellauer, of Frauenfeld, and Prof. Weber, of Geneva; Treasurer, Mr. P. A. Kölliker, of Zürich.

This session was attended by about sixty dentists, who came from all parts of Switzerland. It was characterized throughout by a mutual fraternal feeling. Among the papers read and cases presented at this session, was a valuable contribution on actinomycosis, by Prof. Redard, of Geneva.

Hitherto the method in vogue, of admitting dentists to practice in Switzerland, has been very incomplete and unsatisfactory, each canton having its own standard of admission and examination, which in some of them is very inferior and entirely unsatisfactory. Steps have been taken to secure the passage, in the *Bundesrath*, of an act to regulate the practice of dentistry, by requiring uniform compliance throughout the Republic.

The next meeting of the "Swiss Odontological Society" will be held in Geneva, during the current year, and hopes are entertained that the session will prove of much value to the profession in Switzerland.

Respectfully,

W., Zahnarzt.

GENEVA, SWITZERLAND, Jan. 10, 1887.

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## REVIEWS AND ABSTRACTS.

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TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION at the Twenty-sixth Annual Session, held at Niagara Falls, N. Y., commencing on the 3d of August, 1886. S. S. White Dental Mfg. Co., Philadelphia.

Through the courtesy of a member of the American Dental Association I have been permitted to examine its recent volume of transactions, in which is recorded its work at Niagara Falls last August. It is a book of 192 pages, bearing the imprint of the S. S. White Dental Manufacturing Company. In glancing through it but few typographical errors were observed. It is compiled and edited by the careful hand of Dr. Geo. H. Cushing,



whose ten years experience as Recording Secretary is a guarantee for accuracy.

This is the first volume of these transactions it has been the writer's privilege to see since the association inaugurated the formation of sections in 1878. Perhaps to state that it does not appear that the present system shows any marked advantage over the old regime of special committees, may be a confession of positive obtuseness. But the writer is, nevertheless, forced to admit that he can not see any marked improvement in the facilitation of either the association's business or the professional or scientific discussion or work by reason of this change.

At present, it appears, the Association is divided into seven sections, and its constitution requires that each *member* shall identify himself with one or more of these sections when he joins the Association; also, that on the second day of each annual meeting the roll of *permanent members* shall be called for the reorganization of the sections.

It must be remembered that this organization is composite in its membership. It is composed of delegates from local societies and colleges, who have the option of becoming permanent members, and of permanent members. Just what becomes of these delegate members in the organization of sections does not appear. The inference, however, would be warranted that they must have to "flock by themselves," or else be only lookers on, as only permanent members are called to organize the sections.

In the present volume it appears that thirty-seven different organizations were present by their delegates. In the annual address, delivered by the late president, Dr. W. C. Barrett, which is a terse and business like document, but full of good suggestions, and breathing forth the most ardent aspirations for the dental profession, he says: "A national organization that is the representative head of American dentistry should be a dignified body, and one that truly represents *the* PROFESSION. It should be made up of our best men. It should lead in thought, and possess the scientific confidence of every man. It should have a standing among scientific bodies, and its decisions upon professional matters should, in the eyes of all men, be final. \* \* If the American Dental Association is to be the acknowledged head of dentistry in this country it must be worthy of the position."

The writer quotes the above extract fearing that he, a non-member of the association, might be deemed presumptuous in commenting upon it. His only warrant for doing so lies in the assumption by the association of being the representative head of the dental profession in this country. In its organic law the association assumes to represent the organized dental profession, and by its acts it also claims to represent the entire dental profession (unorganized as well). Hence its acts, its methods, and its tendencies must be a rightful matter of concern, comment, criticism, approval or dissent of each and every member of the profession, or else the claim of the association of being the representative head of dentistry of the United States must fall flat.

From the volume before me it does not appear that these several sections meet separately as specialists of prosthetic dentistry, metallurgy and chemistry (Section I), or of dental education, literature and nomenclature (Section II), or of operative dentistry (Section III), or of histology and microscopy (Section IV), or of materia medica and therapeutics (Section V), or of physiology and etiology (Section VI), or of anatomy, pathology and surgery (Section VII).

Each one of these sections has a chairman and secretary, but the matter and papers by them introduced appear to be presented to the association at full length, and to have been considered and discussed not by members of their respective sections merely, but in the general assemblage.

This method of introducing and considering subjects over the method in vogue ten years ago by committees, does not, to the uninitiated, appear to be of any practical utility, excepting so far as appearances go. It seems to resolve itself merely in a change of name from committee to section. The sections being substantially what the committees were in work and effect, excepting that they are larger and the membership is voluntary and not by appointment or selection by the association.

The query naturally arises, "Why was this change made?" and the only possible answer that seems available is: to be on a par with the American Medical Association, which is divided in that manner. Possibly this imitation by our profession of methods which are entirely unnecessary, in our circumscribed field of practice, though probably very desirable and essential in a medi-

cal association with its extensive scope of operations, may to some of our sycophantic brethren give some comfort. It may be another attenuated straw link in the chain of evidence to prove that dentistry is a caudal affix to the medical kite. In this connection the writer observes that Dr. Barrett, the president of the association, refers to dentistry as the *profession*; and Dr. Allport, the president-elect, asked "that we may one and all in the future do what we can to add to the usefulness and respectability of our *profession*." Neither of them spoke of our *specialty*.

The discussions in Section I, received their key notes from a well digested paper on "*Recent Improvements on Vulcanizers and Vulcanizing*," by Dr. Wm. H. Trueman, which dwells largely on the advantages obtained from the dry steam process of vulcanizing, one by Dr. L. P. Haskell on "*Mineral Teeth—Needed Improvements*," which should be engrossed and a copy presented to each manufacturer of artificial teeth, and a paper on "*Notes on Vegetable Bases for Artificial Dentures and on Solder Alloys*," by Dr. W. H. Dorrance.

The discussion which followed appears to be largely relating to rubber and its injurious effects as a dental plate, and very commendatory remarks upon Dr. J. Rollo Knapp's bridge-work and blow-pipe.

Under the head of "Operative Dentistry," Dr. Herbst, of Bremen, Germany, was invited to explain his method of introducing gold fillings by the rotary process. The discussions on this subject are quite voluminous and exceedingly courteous to the visitor from abroad, but the reader does not find an expression of that enthusiasm between the lines that would lead him to abandon old and tried methods at once.

The section on anatomy, histology and microscopy, presents a carefully prepared and finely illustrated article on "Hyperostosis of the roots of the teeth," by Dr. Frank Abbott, which, with the discussion on same, covers over thirty pages of very instructive reading.

The section on pathology, therapeutics, materia medica and surgery, presented a paper on "Bacterio-Therapy," by Dr. A. W. Harlan, which is largely a second and revised edition of his paper read before the Illinois State Dental Society last May. Though a very valuable article and a condensed encyclopædia on disin-



fectants and bacteria killers, it is just a little astonishing that the author should have carried second-hand goods to Niagara. The paper is reproduced in full in the "Cosmos" for January, 1887.

In the same section Dr. J. Hooper describes a case of excision of the inferior dental nerve, in which the nerve was uncovered by means of the dental engine and the fissure bur, and also some other surgical operations.

The section on physiology and etiology submitted a blank form or chart for observation with litmus tests of the oral fluids. It also presents papers on "Protoplasmic Nutrition and Molecular Metamorphosis of the Dental Tissues," by Dr. A. H. Thompson; one by Dr. H. A. Smith on "Surgical Diseases of the Tongue"; one by Dr. A. H. Thompson on "Pathological Heredity and Gouty Teeth." A voluntary paper by Dr. Morsman on amalgam and dental alloys is also published. Altogether, the volume shows that the gentlemen comprising the American Dental Association, have at least kept fully up "with the procession" in the onward and upward march of our calling.

An appropriation of \$200 to each of four of these sections was made at this session for the purpose of encouraging original investigations, for which the association deserves the unstinted praise of the entire profession.

If more of the dentists of this country could avail themselves of attendance upon the association's meetings, or if the association could see a way of giving its annual transactions a wider circulation, its scope of influence and usefulness would be materially enlarged. Could it not add to its membership another class of—say subscribing—members, who, by the annual payment of a small fee, shall thereby be entitled to receive its annual transactions?

K.

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#### TEXT BOOKS.

"DISEASES OF THE DENTAL PULP AND THEIR TREATMENT."—That text books should be so written as to present a coherent, consistent series of doctrinal statements will be acknowledged.

Are the books we have so written? I think not. How any competent editor or proof reader should be so far under the pres-



sure to "make a book" as to connect in the same volume the two papers on "Pathology of the Dental Pulp," and on "Diseases of the Dental Pulp and Their Treatment," in the "American System of Dentistry," is a poser. The assumption of the knowledge of *cause*, as manifested in the display of mental and bodily processes in ratiocative and physiological activity, is the *bete noire* of writers of text books and other literary productions.

Teachers should be careful to avoid manufacturing their facts and imperiously forcing their philosophical deductions, as if they alone were admitted to the hidden arcanum of productive energy.

A quotation makes a writer say "Sulphuretted hydrogen compounds of which putrefactive gases are constituted." These are gases resulting from putrefaction, but what gases are putrefactive?

Whenever the author touches functional or molecular changes he is in water too deep for him. Where remedies are named he is clear but bigoted and dogmatic, while special pleading and apologetic and deprecativ in tone. He mistakes the origin and purpose of rhizodontology. It was devised to conserve the life of the inflamed pulp, and *not* as a mode of treating "pulp gangrene." Also, he mistakes atrophy of pulps in well organized teeth for "dry gangrene," "gangrena senilis" of writers. "Mummified pulps" are called both wet and dry. This is of a piece with many mystifications and contradictions of statements "in the clearest possible manner" promised in the opening paragraph of this muddle of misapprehension and misstatement of doctrines too fine for satisfactory grasp by the mind which has assumed to set them forth in "The American System \* \*." "The latest and best," as it *should* be, of text books.

Surplusage and incorrectness of verbiage, with the oft recurring &c., &c., mar and ambiguize an otherwise correct doctrine throughout the brochure. "Polypus of the pulp" is a misuse of words, as the proposed treatment indicates. Many footed growths, as the word means, do *not* arise from the body of the pulp. Two kinds of polypoid growths are known in the human body, viz.: sarcous and gelatinous. They may be multi-saccular or single bodies, holding gelatinous or bloody contents *without* nerves; therefore incapable of a suppurative degree of the inflammatory process. Extirpation and cautery to the pedicle or seat of growth

is the only treatment to be resorted to. The whole article settles the standing of dentistry on its own "independent" feet!

A.

**THE MANAGEMENT OF PULPLESS TEETH.**—This a brief monograph prepared by the members of the Odontological Society of Chicago, and in the dedication they say:

"The Odontological Society of Chicago, realizing the want of some hand-book of reference in relation to the treatment of pulpless teeth that are to remain in the jaws, sends out this monograph, with the hope that it may prove of service to the profession.

"It purposes to detail a simple, but comprehensive, system of treatment, without attempting to present the various other meritorious methods which have from time to time been advocated.

"It is dedicated to the Dental Profession of the West."

The frequent observation of cases in which pulpless teeth have been improperly or very imperfectly treated, suggested to the gentlemen composing this society the probable usefulness of a treatise on this subject, that should explain simply and briefly the principles involved in the management of such teeth, and should describe, plainly and in detail, the operations required to be performed upon them. No attempt has been made to treat any of the subjects exhaustively, but only to detail an effective and practical method of treating each of the different, more common and ordinary cases that present themselves in every day practice.

There are ten headings or chapters. "The Management of Pulpless Temporary Teeth;" "Permanent Teeth in which the Pulps have been Recently Devitalized (Under this heading the process of canal filling is described in detail);" "Blind Abscesses;" "Abscesses with Fistulous Openings;" "Surgical Procedures;" "Teeth Which no Treatment can Render Useful," etc. An appendix contains instructions for making instruments from piano wire for removing the contents of pulp canals; for drawing the temper of Swiss broaches, to either spring temper or completely soft; the making of gutta-percha cones; the bleaching of teeth; and something about the antiseptics and disinfectants suitable for use in pulpless teeth.

The *Archives of Dentistry* for 1887, will be edited by Drs. W. H. Eames and C. T. Stockwell. Dr. Eames for a long time was the editor of the *Missouri Dental Journal*, and the profession everywhere will gladly welcome him, as he takes his place in the editorial chair. Dr. Stockwell is favorably known from his connection with the *New England Journal of Dentistry*, which was consolidated with the *Archives* a few years ago. Dr. John G. Harper, of St. Louis, is the only associate editor so far announced, although from the space left vacant, on the title page, we presume he will not suffer from want of company, when it is filled with names in small-caps. We congratulate the editors on the outlook for the future prosperity of the *Archives*.

## DENTAL COLLEGE COMMENCEMENTS.

### PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The thirty-first annual commencement of the Pennsylvania College of Dental Surgery was held on Saturday evening, February 26th, 1887, and the degree of Doctor of Dental Surgery was conferred on the following named (79) graduates :

E. Herbert Adams, Canada.  
 Vittorio Adler, M.D., Italy.  
 Holsten Bartilson, Pennsylvania.  
 J. M. Briggs, Georgia.  
 Reginald Wallace Bird, Kingston, Jamaica.  
 James M. Burke, New York.  
 Chas. W. Blind, Pennsylvania.  
 Carolina Bonin, Germany.  
 Luis Campuzano, Cuba.  
 John Robert Conway, Minnesota.  
 Woodfred E. Clayton, Canada.  
 G. Carrow Chance, Pennsylvania.  
 James A. Calhoon, Pennsylvania.  
 Lewis H. Chamberlin, New York.  
 Bellville M. Crary, Pennsylvania.  
 William P. Clark, Pennsylvania.  
 R. Melvin Davenport, Massachusetts.  
 Elliott C. Douglass, Connecticut.  
 R. A. Dinsmore, Pennsylvania.  
 George B. Dodd, Wisconsin.  
 George C. Eighme, New York.  
 J. O. Ely, Pennsylvania.  
 P. Judson Eckel, New Jersey.  
 Howard Townsend Eachus, Pennsylvania.  
 Charles H. Fritts, Pennsylvania.  
 Paul F. Griselle, Ohio.  
 J. Howard Gaskill, Pennsylvania.

Alfred Gysi, Switzerland.  
 Frank S. Garrett, Pennsylvania.  
 Lewis S. Goble, New Jersey.  
 Frank E. Hendrickson, New Jersey.  
 E. R. Hershey, M.D., Pennsylvania.  
 Albert F. Hug, Illinois.  
 Charles S. Holden, Massachusetts.  
 Charles L. Hill, Pennsylvania.  
 Edward S. Jackson, Pennsylvania.  
 Adelheid Jacobi, Germany.  
 Charles G. Keeney, Pennsylvania.  
 Albert G. Koehler, Pennsylvania.  
 J. A. Kressly, Pennsylvania.  
 J. W. Lambie, New York.  
 William C. Mason, Pennsylvania.  
 Wilhelm Theodore Muschan, Germany.  
 Frank H. McOmber, New York.  
 John H. McClure, West Virginia.  
 Joseph Elias Miller, M. D., Pennsylvania.  
 William P. Noyes, Maine.  
 J. A. Neiman, Pennsylvania.  
 Milville S. Page, Connecticut.  
 Edson J. Quackenboss, Massachusetts.  
 Albert S. Rabenold, Pennsylvania.  
 Orville Rector, New York.  
 Lee Grant Richardson, New York.  
 A. Percy Roberts, Pennsylvania.  
 Joseph T. Rowand, California.



David Z. Sahler, Pennsylvania.  
 Peter Jos. Hub. Schwan, Germany.  
 George H. Seaver, New York.  
 William F. Shotts, Pennsylvania.  
 Casimir Oscar Shulthess, Switzerland.  
 Amos Harrington Sibley, Pennsylvania.  
 William B. Sickler, New Jersey.  
 George B. Smith, Ohio.  
 D. Arthur Smith, Pennsylvania.  
 Ernest A. Smith, N. B., Canada.  
 Edw. M. Stroud, Pennsylvania.  
 Robert H. Tecklenburg, Pennsylvania.  
 Carola Timmermann, Germany.

Charles M. Truesdel, Minnesota.  
 Joseph Vossen, Germany.  
 Walter Roselle Vrooman, Canada.  
 George W. Warren, New Jersey.  
 Clayton W. Wells, L. D. S., Ontario,  
 Canada.  
 Walter Hart Williams, Pennsylvania.  
 Camille Wisner, France.  
 Perrie G. Wood, New York.  
 Frank L. Wright, Pennsylvania.  
 F. D. Yielding, Pennsylvania.  
 George B. Zell, Maryland.

### PHILADELPHIA DENTAL COLLEGE.

At the twenty-fourth annual commencement of this institution, held at the Academy of Music, in Philadelphia, Pa., on Friday evening, February 25th, 1887, George W. Hall, of New York, delivered the valedictory address, and Prof. J. E. Garretson, M.D., D.D.S., the Dean of the Faculty, conferred the degree of Doctor of Dental Surgery on the following named (79) persons:

Edson J. Abbey, Connecticut.  
 Eugen Bernhardt, Germany.  
 Clement E. Bill, Connecticut.  
 John A. Bolard, New Jersey.  
 Edward Bolard, Pennsylvania.  
 H. E. Brady, Pennsylvania.  
 Asher S. Burton, New Jersey.  
 Asher J. F. Buxbaum, M.D., Ohio.  
 C. L. Card, New York.  
 Jose de la Cerday Gomez, Spain.  
 F. N. Chamberlain, Ohio.  
 Mark O. Cooley, New York.  
 John C. Curry, New Jersey.  
 Harry P. Derr, Pennsylvania.  
 B. B. Detwiler, Virginia.  
 Ferdinand Dietzi, Switzerland.  
 Edgar L. Dow, Massachusetts.  
 H. E. Duncan, Iowa.  
 W. L. Dupois, Canada.  
 William Dunn, Italy.  
 J. W. Erwin, Pennsylvania.  
 Albert P. Fellows, Kansas.  
 Frank E. Ferris, Iowa.  
 Samuel E. Frick, Pennsylvania.  
 Miles D. Glidden, Maine.  
 George W. Hall, New York.  
 Mark E. Harrison, Missouri.  
 John T. Hinch, Maine.  
 James A. Hodgins, Canada.  
 Herbert G. Hodgkins, Maine.  
 William D. Hughes, Pennsylvania.  
 Edgar L. Hurd, Maine.  
 Charles S. Inglis, New Jersey.  
 William T. Jackman, Ohio.  
 Charles W. Jarvis, Canada.  
 Frederick E. Judson, Minnesota.  
 George H. Judson, New York.  
 Albert C. Kellogg, Iowa.  
 Charles J. Kinkad, Delaware.  
 S. Lacaverie, Cuba.

M. H. Lamorrel, New York.  
 Julian Landau, Germany.  
 Arthur W. S. Loewen, Pennsylvania.  
 Charles H. Lovejoy, Indiana.  
 Fred Henry Lyder, Ohio.  
 J. Hyatt Lyke, New York.  
 Alex. Wm. Marshall, Australia.  
 Jacob Marquis, Pennsylvania.  
 Joseph McCreery, Jr. Pennsylvania.  
 Wilson Y. McGown, Maine.  
 Edward T. McNally, Massachusetts.  
 Hannah J. Mercer, Pennsylvania.  
 T. R. Morrison, Maine.  
 Karl Ritter von Nauman, Austria.  
 Edward O'Neill, Pennsylvania.  
 P. T. O'Reilley, Massachusetts.  
 Charles L. Porter, Delaware.  
 James J. Rafferty, Massachusetts.  
 A. Rogmans, Netherlands.  
 Joseph O. Rothwell, Ohio.  
 J. Antonio Serrano, Republic of Columbia.  
 J. Wesley Shaw, Massachusetts.  
 Orlando B. Shedd, New York.  
 George H. Smith, Pennsylvania.  
 John L. Stickel, Illinois.  
 P. F. Struppler, New York.  
 Auguste Sulzberger, Switzerland.  
 Lot D. Sutherland, New York.  
 Herbert S. Sutphen, New Jersey.  
 Ernest A. Tripp, Utah.  
 Charles L. Van Fossen, Kansas.  
 H. Bernhard Voigt, Germany.  
 Arthur E. Wales, Connecticut.  
 Miss Marion Ward, California.  
 George T. Ware, Canada.  
 Charles X. Weis, Connecticut.  
 George B. Williamson, Ohio.  
 T. Frank Windle, Pennsylvania.  
 William T. Wyckoff, New Jersey.



## UNIVERSITY OF TENNESSEE.—DENTAL DEPARTMENT.

At the ninth annual commencement of the Dental Department of the University of Tennessee, held at the Masonic Theater, in Nashville, Tenn., on Tuesday evening, February 22d, 1887, W. B. White, Jr., of Kentucky, delivered the valedictory address, and O. P. Temple, A.M., President of the University, conferred the honorary degree of Doctor of Dental Surgery on N. H. Wilson, of Indiana, and the same degree, in course, on the following named (21) graduates :

B. F. Atwood, Kentucky.  
C. L. Averett, Georgia.  
Jas. W. Bablow, Kentucky.  
W. Fred Brotherton, Wisconsin.  
Frank A. Brown, Indiana.  
Jas. K. Bryant, Kentucky.  
F. M. Fewell, Indiana.  
A. A. Francis, Ohio.  
Marshall Grigg, Tennessee.  
E. J. Harris, Indiana.  
W. W. Krape, Illinois.

M. J. Massengill, Louisiana.  
Logan J. McLean, Georgia.  
A. M. Piatt, Michigan.  
J. Q. Ramsey, Missouri.  
E. E. Rust, Wisconsin.  
H. P. Smith, Kansas.  
Jno. E. Suber, Mississippi.  
Jno. E. Thomas, Indiana.  
W. B. White, Kentucky.  
M. H. Wilcox, Missouri.

## NEW YORK COLLEGE OF DENTISTRY.

The twenty-first annual commencement exercises of the New York College of Dentistry, were held at Chickering Hall, New York city, Wednesday evening, March 9th, 1887. The list of matriculates during the year numbered one hundred and ninety-three. The valedictory address was delivered by Geo. S. Burt, D.D.S., and the address to the graduates by W. A. Purrington, Esq. The degree of Doctor of Dental Surgery was conferred by M. McN. Walsh, Esq., President of the Board of Trustees, on the following named (51) persons:

James Charles Alker, France.  
George Sumner Burt, United States.  
Gregorio Santos Benet y Llata, M.D.,

—  
Samuel Skinner Brown, United States.  
Valentine Edw. Norman Cook, Eng-  
land.

Thomas Alfred Clawson, United States.  
John Harvey Crane, United States.  
John Richard Crawford, United States.  
John Clayton Downs, United States.  
Frank Perry Denny, United States.  
George Anthony Dow, United States.  
Frank John Eversfield, United States.  
William Eybel, United States.  
Samuel Hassell, Jr., United States.  
Erastus Otis Houghton, United States.  
Spencer Cone Hamilton, United States.  
Paul William Hiller, United States.  
Halstead Pell Hodson, United States.  
Ira Daniel Horton, United States.  
Samuel Porter Hopkins, United States.  
Leo Frederic Hugle, Germany.  
Frank Alfred Katzmeier, Germany.  
Samuel James Kennedy, United States.  
Louis Charles Leroy, United States.  
Frank Butler Longenecker, U. S.  
Edwin Parker Marshall, United States.  
Francis Joseph McLaren, Scotland.

Ferdinand Moith, United States.  
Henry Middleton, Italy.  
Lorenzo Noa, Porto Rico.  
George Edward Nearing, United States.  
Arthur German Rouse, United States.  
Franklin Willard Rogers, United States.  
Dudley John Russell, United States.  
Horace Reynolds, United States.  
Felix Edmond San Fuentes, Ph. B.,  
Chili.  
Thomas Howard Stevens, United States.  
Charles Harvey Smith, United States.  
Harold Slade, United States.  
Preston McCready Sharp, United States.  
Richard James Secor, United States.  
Walter Lincoln Scofield, United States.  
Joseph Daniel Sayre, United States.  
George Joseph Taylor, England.  
Daniel Webster Valentine, United  
States.  
Walter Woolsey, United States.  
Herman Eugen Albert Wichert, Ger-  
many.  
George Mortimer Whitfield, United  
States.  
John Van Pelt Wicks, United States.  
Ulysses Grant Woolley, United States.  
Leonhardt Eichbery Zuchtmann, United  
States.

## MEHARRY SCHOOL OF DENTISTRY.

At the commencement exercises of this institution, held at the Masonic Theater, in Nashville, Tenn, on Monday evening, February 21st, 1887, Prof. W. H. Morgan, M.D., D.D.S., delivered the address to the graduates. Rev. J. Braden, D.D., President of Central Tennessee College, delivered a certificate of excellence in mechanical dentistry to F. D. Carter of New Orleans, La., and conferred the degree of Doctor of Dental Surgery on the following graduates :

John Wesley Anderson, M.D., Wyandotte, Kans.  
Robert Fulton Boyd, M.D., Nashville, Tenn.

Henry Thomas Noel, M.D., Nashville, Tenn.

## UNIVERSITY OF IOWA.—DENTAL DEPARTMENT.

The fifth annual commencement of the Dental Department of the State University of Iowa was held in the Opera House, Iowa City, Iowa, on Monday evening, February 28th, 1887. The annual address to the graduates was delivered by the Hon. W. W. Dodge, and the valedictory address by Jessie Ritchey, of Onawa, Iowa, after which the President of the University, J. L. Pickard, LL.D., conferred the degree of Doctor of Dental Surgery on the following (24) graduates :

C. W. Aydelotte, Newtown, Indiana.  
H. N. Edwards, Des Moines, Iowa.  
L. S. Field, Calmar, Iowa.  
E. T. Giddings, Logan, Iowa.  
E. S. Glasier, Brush Creek, Iowa.  
T. J. Glenn, Plymouth, Wisconsin.  
C. H. Hare, Knoxville, Iowa.  
F. A. Hefner, Delaware, Iowa.  
J. H. Johnson, Waukon, Iowa.  
J. J. Little, Burlington, Iowa.  
W. A. Maxwell, Villisca, Iowa.  
R. McNutt, Muscatine, Iowa.

J. A. Neill, Bismark, Iowa.  
Jessie Ritchey, Onawa, Iowa.  
F. M. Shriver, Glenwood, Iowa.  
H. W. Shriver, Red Oak Iowa.  
J. W. Soule, Ottumwa, Iowa.  
Joseph Stott, Burlington, Iowa.  
W. R. Tipton, Brooklyn, Iowa.  
H. M. Vawter, Knoxville, Iowa.  
J. B. Vernon, Marengo, Iowa.  
D. P. Wetzel, Grundy Center, Iowa.  
Alfred Wood, A.M., Iowa City, Iowa.  
Geo. B. Yergey, Villisca, Iowa.

## OHIO COLLEGE OF DENTAL SURGERY.

The forty-first annual commencement of the Ohio College of Dental Surgery, was held in the College Hall, Cincinnati, O., on Wednesday evening, March 2d, 1887. Prizes were awarded to students excelling in various branches by Prof. H. A. Smith, Dean of the Faculty. The address was delivered by Hon. H. P. Loyd, and the degree of Doctor of Dental Surgery conferred on the following graduates by Dr. G. W. Keely, President of the Board of Trustees :

A. W. Black, Indiana.  
L. A. Brown, Minnesota.  
L. E. Custer, Ohio.  
L. E. Day, Ohio.  
G. H. Doulton, California.  
W. F. Edmonds, Kentucky.  
J. S. Emery, Ohio.  
J. W. Fisher, Kentucky.  
C. H. Green, Jr., Indiana.  
E. S. Griffiths, Ohio.  
M. A. Hadcock, Canada.  
B. C. Hinkley, Ohio.  
T. L. Johnson, Ohio.  
E. S. Keefer, Ohio.  
Miss M. L. Leiningar, Ohio.

C. H. Martin, Ohio.  
E. S. Mathews, England.  
H. C. Matlack, Kentucky.  
E. J. McCartney, Pennsylvania.  
B. A. McGee, Indiana.  
C. E. Miles, Ohio.  
A. H. Millman, Ohio.  
B. A. Mosbey, Indiana.  
W. W. Reed, Ohio.  
F. L. Rice, Ohio.  
J. M. Rutherford, Ohio.  
E. J. Schwartz, Ohio.  
James Silcott, Ohio.  
J. J. Werner, Switzerland.

## INDIANA DENTAL COLLEGE.

The eighth annual commencement of the Indiana Dental College, was held in the college lecture room, Indianapolis, March 2d, 1887. Dr. W. L. Heiskell, President of the Board of Trustees, conferred the degree of Doctor of Dental Surgery on the following graduates :

L. G. Bell, Germany.  
Charles Woelz, Indiana.  
Jno. E. Carmon, Illinois.  
Jno. H. Evans, Indiana.  
S. Oliver, Pennsylvania.  
J. J. Lickly, Michigan.  
T. J. Hood, Kentucky.

S. N. Blackledge, Indiana.  
Milton Lamb, Indiana.  
John H. Bird, Michigan.  
Jas. W. Bates, Michigan.  
W. N. Easton, Michigan.  
Geo. Marbach, Germany.  
P. W. Earhart, Indiana.

## VANDERBILT UNIVERSITY.—DENTAL DEPARTMENT.

The eighth annual commencement exercises of the Dental Department of the Vanderbilt University, were held in the chapel of the University, Nashville, Tenn., on February —, 1887. The class oration was delivered by S. M. Foster, D.D.S., and the charge to the class by the Chancellor of the University, L. C. Garland. The degree of Doctor of Dental Surgery was conferred on the following graduates :

A. C. Drake, Kentucky.  
P. D. Cooper, Tennessee.  
A. A. Dyer, Texas.  
B. D. Brabser, Tennessee.  
N. A. Neeley, Tennessee.  
J. A. Parrish, Georgia.  
T. B. Birdsong, Mississippi.  
L. H. Henley, Alabama.  
P. H. Wright, Mississippi.

W. H. Caffey, Alabama.  
J. M. Hall, Tennessee.  
E. T. Hardaway, Missouri.  
George A. Harper, Louisiana.  
J. J. Austerwell, Missouri.  
S. W. Foster, Alabama.  
F. M. Alexander, Georgia.  
Geo. A. Foster, Kentucky.  
Albert Robinson, Michigan, honorary.

The Alumni Association of the Ohio College of Dental Surgery elected Dr. W. N. Morrison, president, Dr. M. Stout, vice president, Dr. Grant Mollyneaux, secretary, and Dr. H. L. Moore, treasurer. Executive Committee—Drs. N. S. Hoff, Grant Mollyneaux, and H. L. Moore. The next meeting will be held the first Tuesday in March, 1888. There will be an address by an alumnus, class history from the foundation of the college to 1855 inclusive, and alumni banquet in the evening. Special efforts will be made to have a large turnout in 1888.

The first dental college for the education of the colored, in the South, known as the "School of Dentistry," and which is a branch of the Meharry Medical Department of Central Tennessee College, closed its first session on February 21, 1887, and out of a class of nine the degree of D. D. S. was conferred on three colored gentlemen. This fact is a noteworthy step in dental history, as this is the first school devoted exclusively to the colored race, and the first colored graduating class. One point in connection with the subject must be regretted, and that lies in the fact, that whereas the school does not conform to the rules of the National Association of Dental Faculties, by making the attendance upon two sessions obligatory (accepting five years practice equivalent to one course), its graduates will find it difficult to engage in practice in many of the states where the practice of dentistry is regulated by law, and in which the boards of examiners do not recognize diplomas thus granted. For the better protection of its graduates, as well as in the interests of the school and the profession generally, we hope that the "Meharry School of Dentistry" will give this subject thoughtful attention.



## MEMORANDA.

If any of our readers have used aluminium-bronze for full dentures, we would be glad to hear from them.

Dr. W. P. Dickinson, of Dubuque, Iowa, was a visitor at the February meeting of the Odontological Society of Chicago.

Rush Medical College conferred the degree of M. D. on Dr. W. A. Stevens, of Chicago, at its last commencement, February 15, 1887.

Dr. Fischer-Colbrie of Vienna, Austria, has received the title of Imperial Counsellor from His Majesty, the Emperor of Austria.

A. Weil, M. D. of Munich, Germany, has been appointed dental surgeon to H. R. H. Prince Louis, son of the Kronprinz of Germany.

At the election of officers for 1887, in the Budapest Dental Society, Dr. Videsy Ferencz was chosen president and Dr. Abangi Jozsef secretary.

Dr. C. W. Spalding, of St. Louis, Mo., who has been quite ill for the past four months, is now rapidly recovering, and we hope that he may soon be entirely well.

Dr. A. B. Clark was so unfortunate as to fracture his left leg by slipping on an icy pavement last month. He will be unable to be out for some time, but is convalescing rapidly.

Dr. R. B. Adair, of Gainesville, Ga., spent a few days in the city during February. The Doctor is on his way to Europe, and he started via Nashville, St. Louis, Chicago, and New York.

At the annual election of the Kansas City Dental Society the following were elected officers for 1887: President, C. L. Hungerford; vice-president, C. L. Abbott; secretary-treasurer, W. L. Campbell.

The Ohio College of Dental Surgery, at its recent commencement exercises, conferred the degree of Doctor of Dental Surgery, *honoris causa*, on H. H. Harrison, J. Rollo Knapp, Wm. Knight, M.D., and Wilhelm Herbst.

The Chicago Dental Society holds its meetings in the Grand Pacific Hotel. The Chicago Dental Club meets at the Tremont House, and the Odontological Society at the Leland Hotel. All of the meetings are well attended.

A recent subscriber to the DENTAL REVIEW, residing in close proximity to the "Blue Grass" region of Kentucky, writes us that Dr. G. V. Black's article on the Periosteum and Peridental Membrane is a "gem of dental literature."

At the annual meeting of the Central Dental Association of Northern New Jersey held February 21, 1887, the following officers were elected: President, S. C. G. Watkins; vice-president, George E. Adams; secretary, James G. Palmer; treasurer, Charles A. Meeker.

Pearson's Dental Appointment Book. This is a convenient book to be carried in the pocket. We have no doubt that it will prove useful to all who wish to know at the moment exactly how their time is disposed of. Prices 50 and 75 cts. R. Pearson & Co., publishers.



We have been using Dr. Dunn's syringe (for full description see the advertising pages of this number) for several weeks, and find it very useful for the injection of medicaments which are not irritating. It is easily kept in order and always ready for use, besides being economical and not high-priced.

Dr. L. P. Bethel, formerly of Kent, Ohio, has removed to Toledo, and associated himself with the *Ohio Journal of Dental Science*, having charge of a department called "What We See and Hear." Dr. Bethel's former newspaper experience will undoubtedly be of much assistance to him in his work.

We have been using Stokes' hinged molar clamp for the past year, and have found it especially useful, on account of its easy adjustment, its adaptability, and the certainty of its remaining in position when placed upon a tooth. C. Ash & Sons, we believe, will supply it on order at their branch, 30 E. Fourteenth street, New York.

As an efficient means of reducing congestion in a tooth's pulp or peridental membrane, it is recommended that the tooth be slightly drawn from its socket by a string attached to it, which shall be pulled gently and continuously by the sufferer. This is supposed to remove twists or abrupt bends in the veins, and thereby facilitate the flow of blood from the part.

*American Dentistry in London.*—At Dr. St. George Elliott's "at home" to the Odontological Society in February Dr. Croll, by invitation, filled an upper bicuspid tooth, contouring the mesial and distal surfaces, uniting the fillings through the fissure by the aid of an automatic mallet. Dr. Elliott also gave a clinic by inserting a large gold filling in a lower molar tooth.

The Southern Dental Association will meet the last Tuesday in August at the Hygiea Hotel, Old Point Comfort, Va. The hotel accommodations at Old Point Comfort and the immediate vicinity are ample for the entertainment of about 1,500 persons. It will be a delightful place to hold a meeting at, on the date mentioned, and the practitioners of the old dominion will doubtless turn out in full force.

Eulyptol is recommended for use on the necks of teeth to remove sensitive-ness. It is composed of six parts salicylic acid, two parts crystals of carbolic acid, and one part of Sanders & Sons eucalyptol. The original formula only contained one part of carbolic acid which we have doubled, and find it of greater value in consequence. It is a paste and will adhere to the gums and teeth for some time without dissolving.

An organization known as the "Physicians' and Dentists' Insurance Association" has been recently incorporated in Illinois. Drs. Geo. H. Cushing and T. W. Brophy are members of the Executive Committee, and in the list of "Special Advisory Boards" appear the names of Dr. A. O. Hunt, Iowa City, Iowa, Drs. A. T. Bigelow and T. E. Weeks, Minneapolis, Minn., Dr. J. B. Morrison, Indianapolis, Ind., Dr. F. W. Clawson, Detroit, Mich., and Dr. Walter F. Lewis, of Milwaukee, Wisconsin.

If the points of a hypodermic or other syringe become clogged so that a fine wire can not be forced through them, hold them over a spirit flame for a moment, and the foreign matter will be quickly expelled or destroyed, so that liquids may be used immediately. When a wire has rusted in a needle, dip the point into oil, then

hold it over a flame, and it can be removed. It is well to draw oil through the point, then heat it, and the rust will be removed from the interior; afterwards wash with alcohol, and it is ready for use.

Dr. McKellops says that the following formula will make a solder that will flow easily under all circumstances. Copper 4 parts, silver 7 parts, scraps of gold plate 89 parts. The scraps are to be taken from the plate which is being made at the time. For instance, if a 20 carat plate is being constructed, the addition of the copper and silver in the above proportion is what is required to make the solder. If the piece requires rejoining at any time, add the silver and copper in the same quantity to the original solder and it will flow on the latter without melting it.

TO THE EDITOR: *Dear Sir*—Will you allow me to request those of your readers who will assist in the Dental and Oral Section of the International Medical Congress to furnish me with an abstract of their papers or the papers themselves at once?

These papers must be in the hands of the secretaries as soon as possible in order that a definite programme may be arranged and a proper amount of time apportioned for each subject.

E. A. BOGUE, Secretary.

29 East 30th Street, New York City.

*Arkansas State Dental Association.*—We are pleased to chronicle the fact that this state, bordering on five other states, all of which have dental societies, took initiatory steps last December and completed a state organization in January of this year. Steps have also been taken to secure the passage of a law regulating the practice of dentistry in the state. The following is a list of officers elected: President, Dr. R. D. Seals, Fort Smith; first vice-president, Dr. J. R. Southwick, Fayetteville; second vice-president, Dr. L. W. Millett, Little Rock; recording secretary, Dr. L. G. Roberts, Eureka Springs; corresponding secretary, Dr. M. C. Marshall, Little Rock; treasurer, Dr. T. M. Wyatt, Russellville.

The Eastern Illinois Dental Society will convene to-day in Paris, Ill. Papers are promised from Drs. A. S. Waltz, Garrett Newkirk, M. L. Whiteside, and H. H. Townsend. Clinics will be given by Drs. Ball, Townsend, Waltz, Shafer, Dwight, Campbell, and others. We are pleased to note the activity in dental circles in Illinois, and hope soon to see, at least, a majority of the dentists of the state enrolled as members of the various societies now in active operation. The attention of officers of societies in adjacent states is hereby directed to the fact, that voluntary organization of dental societies, in their own bailiwicks will be hastened by the appointment of supervisory committees from their own active membership. Let the good work go on.

The Southern Illinois Dental Society has issued a very handsome programme for the next meeting, which will be held at Duquoin, Tuesday, April 12, 1887. Papers and clinics are to be as follows:

1. Gold Crown, Clinic, by Geo. A. McMillen, Alton.
2. Root Filling, paper by G. W. Entsminger, Carbondale.
3. Dr. Louis Ottofy, of Chicago, will be present, and give a Clinic in Implantation, Treatment of Abscess, and demonstrate the use of Matrices.
4. Care of Nervous Patients while in the Chair; Essay by R. H. Canine, East St. Louis.

5. Root Filling, Clinic, by C. C. Corbett, Edwardsville.
6. Dr. T. W. Prichett, White Hall, will give results of some experiments in Filling Teeth and Glass Tubes with Amalgam by the Rotary or "Herbst Method."
7. Abscessed Teeth and Treatment of Same, paper by E. M. Cheadle, Murphysboro.

Several other Papers and Clinics have been promised.

The Executive Committee of the Illinois State Dental Society announces the following list of reports and essays for the next annual meeting, which will be held at Jacksonville, the second Tuesday in May next.

1. Report of the Committee on Dental Science and Literature. Dr. C. R. E. Koch of Chicago (Chairman); Dr. M. L. Hanaford of Rockford; Dr. Louis Ottoby of Chicago.
2. Report of the Committee on Dental Art and Inventions. Dr. J. A. Swasey of Chicago (Chairman); Dr. W. T. Magill of Rock Island; Dr. J. Frank Marriner of Ottawa.
3. Essay, Dr. Norman J. Roberts of Waukegan, "Regulating Appliances."
4. Essay, Dr. Homer Judd of Upper Alton, "Retention of Pulpless Teeth in the Jaws."
5. Essay, Dr. A. W. Harlan of Chicago, "Practical Therapeutics, with Notes on the Application of Special Drugs."
6. Essay, Dr. L. C. Ingersoll of Keokuk, Iowa, "Medicinal Stimulants."
7. Essay, Dr. Truman W. Brophy of Chicago, "Diagnosis of Oral Tumors."
8. Essay, Dr. W. N. Morrison of St. Louis, Mo., "Operative Dentistry as applied to Deciduous Teeth."
9. Essay, Dr. L. L. Davis of Chicago, "The Microscope and its Uses in Dentistry."

The culture of Micro-organisms will be continued by Drs. Black and Moody, and an essay is expected from one of them, embracing the results of their investigations.

The Clinics under the supervision of Dr. C. F. Matteson, are expected to be unusually interesting.

In order that the report of the Committee on Dental Art and Inventions may be a valuable feature of our meeting, all members who have anything new, coming under that head, are urged to report it to the committee.

The Executive Committee have decided to issue this preliminary announcement in order to give the members of the society an opportunity to prepare themselves to take part in the discussion of the subjects proposed.

This announcement is subject to such changes and additions as may be found desirable when the final program is issued near the time for the meeting.

E. J. GREENE,  
W. H. TAGGART,  
P. J. KESTER,  
Executive Committee.

Peoria, March 3, 1887.

NINTH INTERNATIONAL MEDICAL CONGRESS, SEPTEMBER 5, 1887, WASHINGTON, D. C.—*President*, N. S. Davis, M. D., LL. D.; *Secretary General*, Jno. B. Hamilton, M. D., of U. S. A. SECTION 17, DENTAL AND ORAL SURGERY.—*President*, Dr. J. Taft. *Vice-presidents*: Dr. W. W. Allport, Chicago, Illinois; Dr. F. Abbott, New York; Dr. W. C. Barrett, Buffalo, New York; Dr. S. W. Dennis, San Francisco, California; Dr. C. L. Ford, Ann Arbor, Michigan; Dr. W. H. Morgan, Nashville, Tennessee; Dr. H. J. McKellops, St. Louis, Missouri; Dr. A. T. Metcalf, Kalamazoo, Michigan; Dr. A. L. Northrop, New York City; Dr. A. O. Rawls, Lexington, Ky.; Dr. Joseph Richardson, Terre Haute, Ind.; Dr. C. W.

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Three conspicuous examples may be given—Paris, 1867; Vienna, 1873; Paris, 1878. At the first Paris Exposition Universelle in 1867 a Gold Medal was awarded to Samuel S. White. No other manufacturer of porcelain teeth was similarly honored. At Vienna, Gold, Silver and Bronze Medals was conferred to distinguish degrees of merit; but above and beyond even the Gold Medal was the Grand Diploma of Honor, which was conferred as the "peculiar distinction of eminent merits." Of the hundreds of individual exhibits from the United States only four were esteemed worthy of this "peculiar distinction." Medals, especially those of Bronze, were lavishly bestowed. The Grand Diploma of Honor, the "only really valuable distinction," was awarded to Samuel S. White. It seems necessary, even at this date, to repeat the statement that the highest award received by any other manufacturer of Porcelain Teeth was a Bronze Medal. At the Paris Exposition of 1878, graded Medals were conferred. In the department of Dentistry four medals were granted to exhibitors from the United States. Three of these were of Bronze and were received by our competitors; the fourth was of Gold and was presented to Samuel S. White.

In the light of the foregoing facts a Bronze Medal would seem to have small claim to the honor of "First Medal" or "Highest Award" at either the Vienna Exposition or the Paris Exposition of 1878.

Most of the World's Fairs, beside those already mentioned, conferred but one medal on all alike whose exhibits were deemed worthy of award, relative merit being indicated, if at all, by discriminating reports of the Judges. The American Centennial, Philadelphia, 1876, is a type of these.

The announcement by an exhibitor that he received the "First Medal" at the Centennial is evidence either of misapprehension of the system of awards or of willful intention to mislead. Every medal conferred was of bronze. The highest award could only be determined by comparing the Judges' Reports on the various exhibits. In proof of our claim that we received the highest award, we submit a copy of the Official Report on our exhibit:

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1. That while equal to all others in color, texture and translucency, they are **DECIDEDLY SUPERIOR** in a faithful reproduction of the physiological characteristics of the natural organs, both in the individual teeth and relatively to the entire set.

2. Their conformation with reference to close and easy adaptation to the maxillary arch shows careful study of the needs of both patient and operator.

3. For the various and numerous deviations from uniformity of arch and outline, simulating the irregularities of nature, and thereby disarming suspicion of their artificial character.

4. For the skillful distribution of tooth-material in such manner as to secure the greatest amount of strength with the least bulk and weight, and for the peculiar form and insertion of the platinum pins. For the maintenance of these good qualities, through an immense variety of size, color and form of each class of teeth, **EXCELLING ANY OTHER EXHIBIT.**

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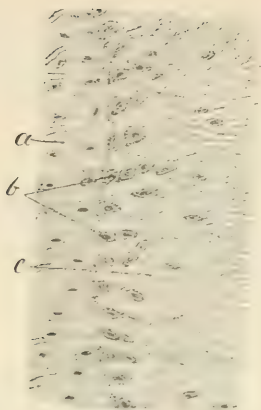
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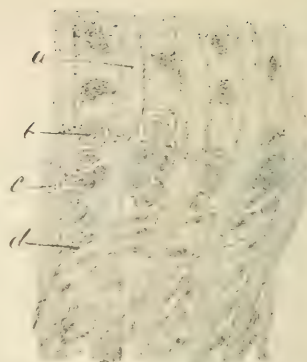
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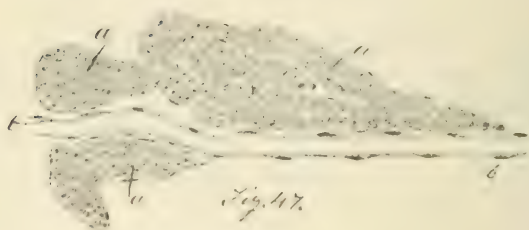




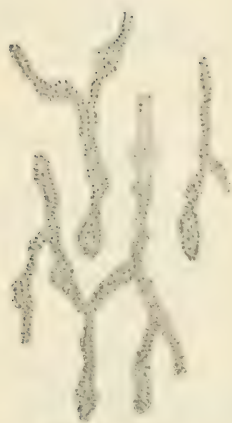
*Fig. 46.*



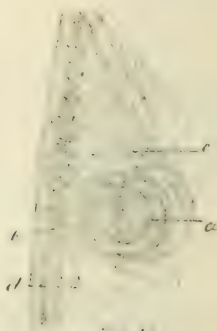
*Fig. 47.*



*Fig. 48.*



*Fig. 49.*



*Fig. 50.*

#### DESCRIPTION OF ILLUSTRATIONS.

Fig. 45, 12th in. obj. reduced. From section including a portion of the alveolar wall, and portions of the peridental membrane, showing the osteoblasts. *a*, Bone. Inner margin of alveolar wall, showing residual fibers. *b*, Osteoblasts. Developing cells are seen in the neighborhood. *c*, Fibers of the peridental membrane. It will be noted that these spring from the bone as solid fibers and immediately break up into fasciculi.

Fig. 46, 12th. in obj. reduced. From section including a portion of the alveolar wall, and fibers of the peridental membrane at a point where these latter are large and compact, and with interfibrous tissue between them. *a*, Bone, showing the large residual fibers. *b*, Osteoblasts filling spaces between the fibers. *c*, Principal fibers of peridental membrane, which at this point maintain the solid form far out from the bone. Compare with fig. 45.

Fig. 47, 12th in. obj. reduced. A lymph follicle or node from near the gingival border of the peridental membrane. *a, a, a*, Lymph-cells seemingly inclosed within enlarged lymph-ducts. *b, b*, Capillary vessel.

Fig. 48, 1-4 in. obj. Lymph-ducts crowded with lymphoid cells. From a section taken horizontal to the surface of the cementum, but a very slight distance from it. Cross cuts of these are seen at *c, c*, in fig. 50.

Fig. 49, 1-8 in. obj. Calcospherite-like spherule in the tissues of the peridental membrane. *a*, Spherule. *b*, Cementum, showing the fibers of the peridental membrane springing from it. *c*, Principal fibers of membrane. *d*, Indifferent tissue. For a small space no fibers are attached to the cementum.



Fig. 50.



Fig. 51.



Fig. 52.

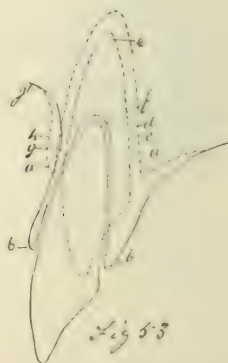


Fig. 53.



DESCRIPTION OF ILLUSTRATIONS.

Fig. 50, 12th in obj. reduced. Cementum and portion of the peridental membrane from the sheep. From a cross section of the tooth. *a*, Cementum. *B*, Cementoblast lying between the fibers, which latter break up into fasciculi immediately after leaving the cementum. *c, c*, Cross section of the lymph follicles or nodes. *D*, Fibroblasts. *E*, Blood vessels. These are accompanied by a large amount of interfibrous, or indifferent connective tissue. *F*, Nerve bundle. *G*, Fasciculi of fibers pursuing a direction different from the main trend of the principal fibers.

Fig. 51, 1-2 in. obj. Rim of the alveolar wall, from a perpendicular section. *a*, Haversian bone, which is left without stippling to render it more apparent. *b*, Subperiosteal bone, showing residual fibers. *c*, Periosteum. *d*, Extreme gingival margin of the alveolar wall. *e*, Fibers of the peridental membrane. *f*, Bone formed by the osteoblasts of the peridental membrane. *g, g*, Points at which the absorption of bone is in progress.

Figs. 52 and 53. Diagrammatic illustration of the movement of a central incisor during the growth of the alveolar process between the age of twelve and twenty-one years. The broken lines represent the tooth and its alveolus at twelve years of age, and the solid the same tooth at twenty-one.

Fig. 52 represents the minimum movement, while fig. 53 represents the maximum movement, as ordinarily observed. The figures are lettered alike. The growth of the process is represented by the movement from *a*, *a* to *b*, *b*. The tooth is carried forward with this growth, and the alveolus is filled with new bone from the line *c* to the line *f*.



# THE DENTAL REVIEW.

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VOL. I.

CHICAGO, APRIL 15, 1887.

No. 6.

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## ORIGINAL COMMUNICATIONS.

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### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

BY G. V. BLACK, M.D., D.D.S.,

Professor of Pathology in the Chicago College of Dental Surgery.

*(Continued from Page 243.)*

#### INTERFIBROUS ELEMENTS OF THE PERIDENTAL MEMBRANE.

Other than the blood-vessels and nerves, the principal interfibrous elements are an indifferent tissue, and the various forms of cells. The principal fibers are accompanied by fibroblasts, which belong to them, and are rendered prominent by any nucleus-tinting dye. Fig. 50, D. But aside from these there is among the principal fibers a very considerable number of fibroblasts, accompanied by very fine fibers, which pass between the principal fibers and often pursue an independent direction. Fig. 46. This I have termed the interfibrous or indifferent tissue. This seems to pervade the entire membrane, and is found wherever the principal fibers are absent, or are coarse enough for it to be distinguished. In figure 46 I have represented this tissue with a high power. The illustration is taken from the margin of the bone near the rim of the alveolus, where the principal fibers are very large. The interfibrous tissue is seen to be ordinary fibrous connective tissue containing the usual fibroblasts. In this instance its course is diagonal to the principal fibers. This tissue is well seen in many regions of the membrane, but when it is mingled with the principal fibers of the vascular region its identity is necessarily lost, except where it forms an investment

for the vessels and nerves. Fig. 50, E and F. Parts of the membrane here and there are made up seemingly of this tissue, the principal fibers being absent. Fig. 49 *d*. This is most frequently seen high up on the root or about its apex, and marks especially those regions of the membrane that I have designated in previous pages as non-attached. In general, when standing alone, it gives the appearance of indifferent tissue. In the young subject its fibroblasts are a marked feature of the membrane when stained with a good nucleus-tinting dye, but in the old these become very thin scales, and do not take stains well, so that it is difficult to make them out, except with high powers. The tissue then appears loosely fibrous, and the fibers, while pursuing no very definite direction, have a general tendency to lie horizontal to the cementum, or parallel with its margin, as seen in lengthwise sections. It does not seem to attach itself to the cementum or bone, as do the principal fibers. The fibrous investment of the blood-vessels and nerves, additional to the tissue properly belonging to their walls, seems to belong to this tissue. In young subjects this is often very abundant (fig. 50, E and F), forming masses accompanying the vessels, and causing deviations in the course of the principal fibers. In older subjects this accompaniment of the blood-vessels mostly disappears, and in sections they come to look comparatively thin walled.

#### BLOOD SUPPLY OF THE PERIDONTAL MEMBRANE.

The blood supply of the peridental membrane is very bountiful in the young subject, and though it is much diminished with the thinning of the membrane as age advances the vessels remain fairly abundant. In the young subject there is a very well marked vascular area lying centrally between the cementum and alveolar wall, or often rather closer to the cementum. This is most regularly seen in cross sections. Through this portion the fibers are deflected from their regular course in many parts to give space to the larger arteries, veins, and nerve bundles. Fig. 50, E and F. The larger arteries enter the alveolus mostly at the apical space, or rather one or two vessels enter here, and immediately break up into smaller ones. One or two of these enter the root canal to supply the pulp of the tooth, while the others—from four to six or eight—pass down along the sides of the root to supply the



peridental membrane. In their passage down the membrane these divide into many branches, a considerable number of which enter the Haversian canals of the alveolar wall, or receive branches from that source. This kind of connection between the circulation of the tissues outside of the alveolar wall and the peridental membrane is very rich in young subjects, and although the bone becomes much more dense with advancing age it is still fairly well maintained. Seemingly for this reason there is not much diminution in the size of the main arteries passing down from the apical space to the gingivus, though they are much increased in numbers. We may therefore say very justly that the blood supply of this membrane is received largely through the walls of the alveolus. Some vessels are continuous, however, from the apical space to the gingivus. I have a few sections from the incisor teeth of the dog cut lengthwise, injected, that show arteries traversing the membrane from apex to gingivus without break, but giving off and receiving branches from the alveolar wall throughout their course. Many of these branches can be traced through the alveolar wall to their connection with the larger vessels of the gum-tissue. These vessels during their course in the peridental membrane give origin to a fairly rich capillary plexus that supplies its tissues. It is rare to see a vessel of any size close to the cementum. This portion of the tissue seems to be supplied almost solely, but very richly, by the smaller capillaries. The passing and repassing of the vessels through the alveolar wall is well seen in sections, and shows many of the larger ones near the bone and within its canals. With the thinning of the membrane as age advances the vessels are found lying very close to the bone, and in case the membrane is very thin many of them lie in grooves in the bone. This is best seen in cross sections. (Fig. 37. March number.) Veins accompany, or perhaps stand a little apart from, most of the larger arteries. At the rim of the alveolus the vessels of the peridental membrane anastomose very freely with those of the gum, and this gives a pretty rich gingival plexus.

From this arrangement of the circulation of the blood in this membrane it will be seen that it is not readily robbed of its blood supply by accident. In case of alveolar abscess involving the apical space, the blood supply from that source is cut off, but that through the alveolar wall and by way of the rim of the alveolus

is ample ; or even in case the supply from both the apical space and by way of the rim of the alveolus is cut off simultaneously, the remaining body of the membrane will be supplied through the alveolar wall, and will not suffer from want of blood. An inflammation involving one part does not necessarily endanger another.

*The sensory function* of the peridental membrane is supplied by nerves entering it in company with the blood-vessels, and from all the sources of blood supply mentioned under that head. The principal bundles, however, enter by way of the apical space, and then divide, a portion entering the apical foramen for the supply of the pulp, while the others pass down the sides of the root, supplying the peridental membrane. A considerable number enter through the walls of the alveolus by way of the Haversian canals, each containing from four to ten or more nerve fibers, may also be demonstrated. These traverse the membrane, giving off smaller bundles which are lost in the tissue, until the gingival border is reached, where, in company with those of the gum tissue, a rather rich plexus is formed.

Specialized nerve terminations have not been found in this membrane in sufficient numbers to show that they are essential. I have seen a few Pacinian corpuscles near the gingival border, and rarely some other knob-like terminations. Generally, however, none of these are found. The bundles of fibers sub-divide into single filaments which are lost in the tissues, and probably terminate mainly as naked fibers.

Through this supply of nerves the peridental membrane becomes the organ of touch for the tooth. The enamel, the portion of the tooth exposed, has not the sense of touch. This may be demonstrated by experiment in many ways. One of the simplest of these is performed as follows: Take any small instrument and touch with it the enamel of any tooth. It will be found that the lightest touch is felt distinctly by the patient. Now place the finger on the opposite side of the tooth and make firm pressure, and while this is maintained again touch the exposed part of the enamel with the instrument. It will be found that under these conditions the touch will not be felt. Now by varying the pressure with the finger it will be found that in order for the touch of the instrument upon the enamel to be felt it must be sufficient to overcome the pressure brought to bear by the finger. A

slight movement of the tooth must be produced so that it may effect the peridental membrane. Without this no sense of touch is manifested. This is different from the temporary semi-paralysis that may be produced by firm continued pressure, or by a blow. In order for this to be effective it must be pretty severe or long continued. For comparison this may be tried upon the hand or fingers. This simple experimentation readily demonstrates that the sense of touch in the tooth is very different from that of the skin. The sense of touch in the finger nails will be found similar to that of the tooth.

Normally, the sense of pain is not easily aroused in the peridental membrane. The office of fixation of the tooth, and maintaining this against the heavy pressure normally brought to bear upon it, demands the capability of withstanding heavy strain and blows without complaint, and at the same time without limiting, in the absence of such a strain, the acuteness of the sense of touch. The membrane does not, however, on this account, bear mutilation without pain. Indeed, the membrane is, perhaps, as painful to injuries as the average of the tissues, and in its inflamed state it becomes exceedingly painful to very slight pressure, as is uniformly witnessed in acute pericementitis. Its rich supply of blood-vessels and nerves renders it capable of rapid recovery from injuries of almost any kind. Indeed, there is no tissue of the body that shows a more marked tendency to recover from severe injuries.

These sensory functions are not destroyed by injury to any particular portion of the membrane. I have carefully tried the sense of touch in teeth after having removed all of the contents of the apical space, *i. e.*, after soreness had so far abated that the sense of touch was not abolished by the sense of pain, and found the sense of touch was, as far as could be ascertained, normal. That the membrane's sensitiveness to painful impressions is not abated by the destruction of the nerves entering by way of the apical space, is sufficiently obvious to all who have had to do with large acute alveolar abscesses producing extensive destruction of the tissues of the apical space. It follows, therefore, that the nerves entering the membrane through the walls of the alveolus are sufficient for the maintenance of the sensory functions.



## LYMPHATICS OF THE PERIDENTAL MEMBRANE.

The peridental membrane has a very peculiar system of cells closely resembling those of the lymphatics. In young subjects these are found in great profusion lying among its fibers close to the cementum. I know of no other system of cells similar to this anywhere within the body of men or of the lower animals. They seem as thoroughly specialized as the Agminated glands or Peyer's patches of the small intestine. I therefore regard them as peculiar to this particular portion of the peridental membrane. They occur mostly in the form of rows of cells insinuated between the fibers of the membrane. They are never far from the cementum, but not in contact with it, except in some isolated cases observed in the pig. These rows of cells anastomose freely with each other and form a network over the whole of the root of the tooth. The number of these is so great that I have counted from one hundred to two hundred of them cut across in the cross section of the root of an incisor tooth of ordinary size. Fig. 50, C, C. These rows of cells vary very much in the number of cells included in their make-up. Sometimes a cross section will show only one or two cells lying together. Again, and more commonly, five or six that form a rounded group, and more rarely, especially near the gingivus, where they are generally larger and more numerous, there will be quite a body of them giving with high powers a gland-like appearance. I have represented one of these in fig. 47, using for the purpose the one-twelfth inch objective, in which its relations to a small capillary vessel are shown.

Very often the cells lie in between the fibers in such a way as to show, in cross or lengthwise sections, rows running outward from the cementum. This is especially well seen in the pig. Often these seem to be single rows of cells, or may consist of two or three rows of cells lying side by side. In either cross or lengthwise sections the islands of cells seem to be entirely detached from each other, especially if the sections are very thin. But in sections cut horizontal to the surface of the cementum at such a distance as to include these cells, they are seen to be in the form of chains that anastomose with each other, and form a network. In fig. 48 I have represented a group of these, using the one-eighth inch objective. This is very readily seen with low



powers if the section, cut in the manner indicated above, be double-stained with carmine and hematoxylin. In this case the lymph cells take the hematoxylin and the fibrous tissues are stained red, and with low powers, the first impression will be that of a fine capillary injection. Higher powers will reveal the true character of the tissue.

The individual cells are like those of the lymphatic glands. They show a circular or polygonal outline, and the central portion takes staining agents strongly. In the larger groups it is easily seen that they are enveloped in a very delicate limiting membrane. This limiting membrane is not so easily seen about the smaller groups or rows of cells. However, by following this carefully, which I regard as a very delicate lymph duct crowded with lymphoid cells, I have been able, in many instances, to connect it with the smaller veins or capillaries in the form of the perivascular spaces peculiar to the lymphatics of other regions. Owing to the extreme difficulty of obtaining nitrate of silver stainings of this membrane, it is specially difficult to make out these points quite satisfactorily.

Klein seems to have shown that nodes of lymph cells develop within the lymph sacks or enlargements of the lymph ducts, which he designates as endolymphangeal, and also outside, but in contact with these, which he terms perilymphangeal nodes.

These are, therefore, endolymphangeal, as distinguished from the perilymphangeal glands or nodes. In fact, these seem to be lymph canals that are packed with lymphoid cells rather than true lymphatic glands.

The cells are very well seen in plain glycerine mountings, especially after acetic acid, and the groups may readily be made out with the half-inch objective, but as they lie crowded among the other tissues higher powers are necessary to differentiate them. These cells are more abundant in the omnivora than in other animals that I have examined, and the pig is an especially good subject for their study. They are very well seen in the herbivora, also, but seem not so abundant in the carnivora. They seem to diminish in numbers as age advances, though this point has not been studied sufficiently. In one membrane from a man, forty years old, the number seems to be much diminished, though groups of them were seen in almost every field. In another from

a man about seventy, only a few groups of the cells were found. It seems probable that these cells disappear, for the most part, with advancing age. In this they agree with specialized lymphatics elsewhere, such as Peyer's patches of the small intestine, and a few that have been noted in other positions.

One circumstance, aside from the histological interest, has directed my attention quite strongly to these cells. In extracting a cuspid tooth a large piece of the anterior portion of the alveolar wall broke away, adhering to the root of the tooth, and gave me the opportunity of making sections for the study of its membrane.

Destructive pericementitis was destroying the membranes of some of the other teeth, but about this one no pockets were observable, though there was some slight redness of the gingivus. On microscopic examination, I found that some of the lymphatics near the gingival border of the membrane were in a state of supuration, while some others did not take staining agents well. This condition followed the lymph chains in the direction of the apex of the root to a distance that surprised me, considering the very slight signs of disease visible before operating, and seemed especially confined to these cells. Examination of these for micro-organisms was not thought of in time.

This case hints quite strongly that these lymphatics are the seat of this very peculiar affection. It seems that it is also these glands that are first affected in salivation with mercury, when, as physicians say, "the gums are just touched," and the teeth become sore when pressed together. Also, when the teeth become sore from other causes that may be regarded as constitutional, i. e., from some agent in the blood that affects these glands.

Formerly, it was suggested by Serres, who is quoted by Salter, that the inner portion of the epithelium—that portion clothing the border of the gingivus folded in against the tooth—acted the part of a gland. This part of the epithelium is softer than other portions, and the evident gland-like action noticed here under the influence of iodide of potassium, mercury, and some other remedies, evidently led to this conclusion, which, from clinical observation, seemed to me to be justified. (See *American System of Dentistry*, vol. I, p. 955.) But since I

have made a more critical study of these lymphatics, it has become clear that it is from these that the results attributed to the inlying epithelium of the gingivus were derived. I find the lymphatics to be larger and much more numerous just in that neighborhood, and while I have found no such thing as a duct leading to the gingival aperture, the glands lie in very close proximity to it. Furthermore, a portion of the connective tissue in immediate conjunction with the tooth is not covered by the epithelium. In other words, there is no attachment of the epithelium to the root of the tooth. It seems to be through this space that the cells—so-called salivary corpuscles—found under the free border of the gingivus, pass. These may be found at any time under the healthy gingivus, and their numbers are augmented with every irritation of the membrane. Indeed, close clinical examination makes it apparent that there is a slight secretion at this point that is not quite satisfactorily explained even yet by microscopic study of the part.

#### HARD FORMATIONS WITHIN THE PERIDONTAL MEMBRANE.

There is occasionally found, in the tissues of the peridental membrane, especially in elderly persons, certain hard formations that resemble the calcospherites so frequently found in the tissues of the dental pulp. I have seen more of these about the roots of the molars than elsewhere, but have also found them along the sides of the roots of the bicuspid. Occasionally I have seen these built into the substance of the cementum, especially in hypertrophies.

In Fig. 49 I present an illustration of one of these, rather a small one from the membrane of a bicuspid, which presents their usual appearance very fairly. They are composed of concentric rings of lime salts united by a basis substance which appears identical with the phleboliths of varicose veins, and calcospherites of the dental pulp. They do not, however, present exactly the same features of either of these. They are much larger than the calcospherites of the dental pulp, and the incremental bands or layers are much thicker. Neither do they present the nodular forms composed of numbers bound together in one mass, so common to either of the before mentioned bodies. They are usually seen as the one in the figure, as isolated spherules, many of which

are large enough to be readily seen with the naked eye. In several instances I have seen two spherules united, but this is unusual. The larger ones, as they appear in sections, after being decalcified, of course, usually show cracks radiating [from the center toward the circumference. This may have occurred in the cutting, though I have no means of determining it. I only know that the smaller ones usually show nothing of this kind. In several instances I have seen cementum built upon the larger ones, and fibers attached, showing that they may become a nidus for an irregular or nodulated hypertrophy. I have also in my collection hypertrophies which show these forms in their substance. Further than this, I know nothing of the origin or significance of these bodies.

In the peridental membranes of old people there is a considerable number of pigment granules found. They occur isolated, or in groups, oftenest about the walls of the blood vessels, but also apart from these. They are intensely black, rather small, and seem to be amorphous. They remind one very much of the pigment so generally seen in lung tissue. They are not present in the peridental membrane of young persons. Nothing is certainly known of their origin or significance. The idea that they arise from extravasations of blood might be suggested, but this seems improbable.

#### OSTEOBLASTS AND ALVEOLAR WALL.

The osteoblasts of the peridental membrane are found on the inner surface of the walls of the alveolus in abundance in young subjects. They lie on the bone between the principal fibers, Figs. 45 and 46, and there are generally many young cells in the neighborhood, filling in between the fibers if they are large and solid as in Fig. 46, or in the meshes of the finer fibers when they break up close to the bone as in Fig. 45. But in this respect the utmost variety will be found. Many localities, even in young subjects, will be found almost destitute of these cells, while others, at only a little distance perhaps, will be crowded with them. In aged subjects they are generally absent, or are represented only by very thin flattened scales, lying close against the bone, that are very difficult of observation. But even in these cases occasional areas will be found in which the osteoblasts ap-



pear, covering the bone as in the young, only less profusely. These are undoubtedly areas of activity, points at which bone is being built up to accommodate some change in the position of the tooth. This will be discussed farther under the head of absorptions taking place in the alveolus.

The building of bone occurs on the inner walls of the alveolar processes in that growth which fits them about the roots of the teeth. These additions are made in the same manner as subperiosteal bone is built up under the attached periosteum, to which the reader is referred. (January number.) The periodontal membrane is very thick in young subjects, and the alveolus correspondingly wide. Bone is deposited upon the inner walls of the alveolar process as the membrane is reduced in thickness. Indeed after the alveolar process is once formed the subsequent deposit of bony matter is mostly on the inner side, filling in the enlarged space through which the crown passed in the process of eruption, to conform it to the root of the tooth. In this growth of bone new canals seem not to be formed by the growth of processes which arch over, as in subperiosteal growths. Nearly all the canals formed open into the alveolus very nearly in the direction pursued by principal fibers of the periodontal membrane. (See Fig. 36, March number.) Many of these approach the alveolus so obliquely that in cross sections such canals appear. In lengthwise sections, however, their true character is sufficiently apparent. The bone is therefore built up in the first instance in the same manner as solid subperiosteal bone, but with canals running in the direction of the growth, or at an angle inclined to that direction. This growth of bone shows the residual fibers very plainly in many of its parts, for the fibers of the periodontal membrane are included in this in the same manner as the fibers of the attached periosteum. This I have attempted to illustrate in Fig. 51, from a perpendicular section through the rim of the alveolar wall, choosing the extreme point of the alveolar process—that represented by *b*, Fig. 53 on the labial side; *d*, Fig. 51 represents the extreme point of the rim of the alveolar wall. *f, f*, The subperiosteal bone which is closely filled with residual fibers from the large fibers of the periodontal membrane *b*. Subperiosteal bone, which is usually small in amount, and on the labial side, is con-

fined mostly to the immediate rim of the alveolar wall; for on the labial side there is more often found absorption of bone, thinning the alveolar wall as it is built up on the inner side. The Haversian bone is left without stippling that it may be more plainly marked, and is pointed out by *a*. *g, g, g*, Are points at which absorption of bone is in active progress. *e*, Points out the fibers of the peridental membrane. This bone, forming the alveolar wall, it will be seen, is first built up solid as under the firmly attached periosteum. There is, therefore, no difference in the building of bone here and elsewhere, except that the included fibers are larger, which gives the bone quite a characteristic appearance. This bone is very soon invaded by absorbants, and canals are burrowed through it, which is followed by the deposit of systems of Haversian bone, thus removing the fibers, as shown in the figure. This process follows very closely the building of the bone, so that there is not at any time a very considerable amount of the alveolar wall that shows residual fibers. This is well shown in Fig. 51, in which I have left the Haversian bone without stippling to distinguish it more clearly. At maturity the bone has become so changed by this process that the residual fibers are confined to the immediate surface, and almost the entire mass of the alveolar wall is seen to be made up of secondary Haversian systems. In old subjects these show all along the inner border the effects of absorptions and rebuildings of bone that have occurred from time to time for the accommodation of changes in the positions of the teeth. This matter will be discussed in detail later.

A description of the origin of the alveolar process belongs rather to embryology, and I shall not enter the discussion of that part of the subject here. The growth of the alveolar process, after the tooth has taken its place in the arch, presents some peculiar features. This growth is, in a large degree, contemporaneous with the development of the tooth's root, whether it be a milk or permanent tooth. The socket at this time is usually much too large for the root, and the peridental membrane is correspondingly thick. This is necessarily the case in the first instance, for the accommodation of the fully formed crown of the tooth. After the tooth has taken its position the alveolus grows smaller by the deposit of bone on its inner wall, until it is brought

more nearly to the size required by the root which it is to support. This occurs very rapidly as the tooth is taking its position in the arch. There is, however, a movement of the permanent tooth, after it has taken its position in the arch, to which I wish to call special attention. This takes place largely during the very noticeable change which occurs in the features about the age of puberty, but is in progress from the time the permanent incisors have taken their places until maturity. I have illustrated this movement diagrammatically in figs. 52 and 53. In each figure an incisor tooth is represented in dotted lines with the rim of the alveolus at *a*, *a*. *e*, Represents the apex of the root, and the dotted line *c* the inner wall of its alveolus; while the space between the lines *c* and *d* shows its thick periodental membrane. This represents the position of the tooth and its alveolus at the age of ten or twelve years. The tooth and alveolus drawn over this with solid lines represents the same tooth in the position it will have assumed at the age of twenty-one or two years. The growth of the alveolar process has carried the tooth in the direction of its length about the distance represented by the length of its crown, or that part of the tooth covered by enamel, as represented in fig. 53, which is the maximum movement that I have observed, while the minimum movement is about one-half the length of the crown, as represented in fig. 52. This movement seems to be rather greater in men than in women, but it presents considerable variation. I should say that the various points of growth of the bones of the face are possibly not determined yet with sufficient accuracy for fixed points to be established that will be without objection. The measurements I have used have been from the anterior spinous process of the superior maxillary bones (figs. 52 and 53, J), to the cutting edges of the superior central incisors. This measurement, made at ten or twelve years of age and at maturity, indicates the movement shown in the diagrams, and is a large factor in the elongation of the face. The movement in the lower jaw seems to be about the same as that in the upper, though it can not be so definitely determined. The principal growth concerned in carrying the teeth forward for the elongation of the arch, is, as is well known, at the back part of the maxillæ, carrying the anterior portions forward to make room for the molars.



The growth of the alveolar process, which carries the tooth with it, as shown in 52 and 53, is almost entirely from the osteal side of the periodontal membrane, or upon the inner side of the alveolar wall. The elongation is made, it is true, upon the rim of the alveolus, the portion represented in fig. 51 growing in a line almost parallel to the length of the tooth from the points *a*, *a*, in figs. 52 and 53, to the points *b*, *b*, and in the meantime all of the space between the wall (inner) of the former alveolus *e*, and that of the final alveolus *f*, is filled in by growth of bone from the osteal side of the periodontal membrane. This is all built in originally with the character of bone represented at *f*, fig. 51, and in figs. 45 and 46, and is removed by absorption and replaced by Haversian bone, as represented at *a*, fig. 51. The plan of this removal and rebuilding is more particularly described in fig. 24 (December number), and on page 122, January number, to which the reader is referred. In this way there is a continuous activity in growth and reconstruction of the alveolar processes during this time, in which the tooth itself, except its cementum, is passive, the dentine and enamel having previously completed their growth. The movement represented in these figures is seen to be almost wholly in the direction of the long diameter of the tooth, but there is some movement of the crown of the tooth forward in the direction of its short diameter. This is accompanied by a tilting of the crown forward, as shown. I have often found absorption in progress about the point *h*, and observation seems to indicate that a reduction occurs as represented from the line *h* to *g*. However, from the want of a fixed point from which to measure, it seems almost impossible to determine the amount of the movement in this direction. The tilting of the crown forward is readily determined, however, by taking the relative positions of the tooth to a perpendicular line.

I do not know that any previous writer has discussed this subject, and I have not now sufficient data at hand for the full presentation of it. Yet it is of great importance in connection with the formation of the dental arch, and serves to illustrate the necessity of retaining it complete during the formation of the features. It also has an important bearing on the subject of the correction of irregularities. I will have more to say of it after having considered the cementum.



## MALLETS AND MALLETING.

BY G. S. SALOMON, D. D. S., CHICAGO, ILL.

The use of the mallet in dentistry exceeds, no doubt, the use of any one instrument which we require for daily use, and strange to say, very little is said about this device in society meetings, text books, or journals; and for this reason I have chosen the above for my subject. There is no doubt that hand-pressure was not considered the very best mode, nor the most practical way, of impacting gold into decayed teeth. The mallet would date back as far as the introduction of gold as a filling material, had the pioneers of our profession understood the real qualities of gold. It is a fact (though it seems incredible) that it was not known for years that gold was weldable at ordinary temperature, fully as well as iron, which can be welded only at a red heat, whilst of late years it has also been ascertained that platinum can be welded at a white heat. It is certain, however, that as soon as the welding property was discovered, the mallet sprang into use spontaneously as it were. Where the mallet came from is difficult to ascertain. The time of its introduction antedates that of any of our practitioners of the present time. Koecker, in "Principles of Dental Surgery," London, published in 1826, writes thus: "But what is more surprising and repugnant after the tooth is thus prepared for the reception of the stopping, some operators actually employ a *hammer* and *punch* to drive the metal into the cavity of the tooth. I have seen the most alarming consequences proceed from this barbarous practice, particularly in the cases of several ladies who consulted me in Philadelphia. Many of their teeth, especially the incisors, or front teeth and cuspidati, had been plugged in this manner." That the mallet was therefore employed prior to 1822, is proven by the fact that Koecker left this country in that year. Who the operators were he does not mention, but it seems certain that the mallet was used secretly by different men in the profession, who, perhaps, were scrupulous about mentioning the mallet to their brethren, for fear of being looked upon as charlatans. In what manner the mallet, or even what kind of a mallet it was, that was thus employed, I am unable to state, but whether or no it was used advantageously is doubtful, for Koecker further

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\* History of Dental and Oral Science, p. 123.

writes: "Some of them (the teeth) had already lost their vitality and were discolored when I saw them, and others were so tender from the violence that had been used, that the least pressure upon them caused exquisite pain." Fitch,\* in 1829, in "A System of Dental Surgery," published in New York, mentions a case of *splitting* an incisor tooth by the mallet, and concludes by saying that he is "persuaded that no judicious surgeon-dentist will ever adopt this very objectionable mode of performing the operation."

The introduction of the mallet has of late years been attributed to Dr. Atkinson, as having been introduced by him, but he declines the honor, and refers to Dr. Merrit, of Pittsburg, who showed him a mallet as early as 1838.

Probably the mallet used before that date was of iron or steel, although the mallet which Dr. Atkinson speaks of was made of wood, but it did not require a great while to prove that a heavier one would answer the purpose and do the work better; in consequence thereof some of the wood was drilled out and filled with lead. This was the original lead mallet which was soon after replaced by the entire leaden and steel mallet.

Before the days of the mallet, teeth were filled for the purpose of saving them; when the mallet and the welding property of the gold became known, dentists became aware of the fact that artistic work could be performed by building out the gold so as to restore the contour of the teeth fully as well as to simply fill the cavities. Now then, begins the era of contour work, but the calculations were not made on a scientific basis, if they were on an artistic one. The preparation of the cavities was overlooked. While using hand-pressure, cavities were simply scooped out, shallow cavities were filled, and strange it seems to a great many of the younger men of the profession, how fillings were retained in teeth for years and years, which would seem almost an impossibility to do to-day, by those who were taught to use the mallet from the very outset. We have proofs of fillings which we see in our patients' mouths, that were inserted thirty and thirty-five years ago without the mallet, without the aid of a dental engine, without the use of the rubber dam, and

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\* Ibid, p. 124.

are still serviceable. Of course these fillings are scarce, and yet we meet with them occasionally. I have some fillings under my observation, which were inserted by the late Dr. Riggs, of Hartford, Conn., thirty-five years ago, and some of these are in good condition. This proves the fact that good work has been and can be done without the aid of any mallet whatsoever; but in our different colleges the manipulation of cohesive gold only is taught, and in consequence thereof the mallet is the only instrument used for impacting gold. Had I any influence, I should use it in the direction towards making it obligatory at the colleges to use a hand-mallet only; any one who understands the use of the hand-mallet thoroughly, may, in after practice, become accustomed to almost any mallet he may choose. When the mallet came into use, dentists, as was mentioned before, began to do contour work; but as the preparation of cavities was overlooked and not taken advantage of, failures after failures were reported by operators, who by their skillful manipulation of soft gold, were accustomed to see their fillings remain in teeth for years. Their malleted fillings dropped out in a few months. This, of course, was not the fault of the operators; they had performed their work as skillfully as ever, if not more so. Oh, no! the mallet had done it all, and consequently it was abolished by a great many of the better operators, who, perhaps, by a little more patience could have wrought wonders. But we must not forget that rubber dam had not as yet been introduced, and the dental engine was as yet very primitive and looked at with distrust. At about this time two factions were in existence in the dental profession, one using soft gold-foil, and manipulating the same by hand-pressure; the other using gold in its natural state, and using a mallet. These two factions are in existence to-day, the former is on the decline, whilst the latter is steadily increasing. Having ascertained this most important fact, the question arises in my mind, which, of all the mallets in use, is the best? And a difficult question it is to answer. Very often we are questioned by our patients whom we consider the best dentist? In a certain city this question would be like, "who is the most popular man in the same city?" The one people think most of, and as a rule patronize, is, in their esteem, the best dentist; so it is with the dentist, the mallet he likes best and uses in his



daily practice, is without doubt, in his judgment, the superior instrument. Now this should under no circumstance persuade us to condemn every similar instrument used by other operators, who, perhaps, are far superior in their workmanship than we imagine ourselves to be.

Dr. Parmly no doubt was under the impression that better results could be obtained by using the hand mallet than by using any other form, although at his time no other mallets were in existence, save the rudiments of one or two automatic mallets which have since been perfected. Hand mallets were no doubt a great achievement, but simple things lose their value after a certain length of time, and dentists in various parts of the country tried to invent something which would replace the assistant, for without the use of the rubber-dam it was next to impossible to do the malleting without one. I have never been able to locate the birth-place of the first automatic mallet, but it seems the first was the one invented by Foote, soon after came Taylor's, Hodge's, Salmon's, Snow & Lewis', Baxter's, Pomeroy's, Gaylord's, Swartley's, Buckingham's, etc., etc. Of all these numerous automatic mallets so-called, but miscalled, the one most used is the Snow & Lewis mallet. All of these mallets are more or less objectionable, although each one may have some good qualities. The Snow & Lewis mallet may be found in the majority of dental offices, and yet I can not see the advantages of it. This mallet may be a fair instrument for the insertion of gold-fillings in molars and sometimes in bicuspid, but its use in frail incisor teeth seems to my mind barbarous to say the least.

I have heard the remark made by a dentist, who has had teeth filled by the aid of the electric mallet, that the blow therefrom was such a *cold-blooded* one; this in my mind would give a good definition of the blow of the Snow & Lewis mallet, the blow is such a cruel one, there is absolutely no regulating it, the softer you wish to strike the worse the snap seems when the spring flies back. But dentists don't seem to mind this very much; very few of our profession I am sorry to say pay little attention to the comfort of their patients; filling the teeth is all most dentists think of. The Swartley mallet seems to me a much better one, the principle of it is no doubt far superior to that of the other, but the objection is made that the movement of the mallet is too



much like that of a jumping-jack, but what of that since it does the work? The blow can be regulated by the four points inserted in the ball, which make it seem like four different mallets. A mallet which was shown to me by its inventor, is that of Dr. Antes, of Geneseo, Ill. His mallet resembles the electric mallet more than any mallet I have ever seen, and also the hand mallet. The armature is quite long, twice as long as that of the electric, and it strikes the instrument which presses on the gold direct, on pressing downward. On lifting the instrument a spring pushes the armature back into its former position. This mallet strikes me as being the best one in imitation of the hand mallet. Of late years we have had a number of mallets in the market called pneumatic mallets; this is about the simplest mallet of its kind. It is simply a piece of metal tubing, into which is fitted a piece of solid metal which slides up and down; at the lower end is a socket which holds the automatic mallet points, and at the upper end is a small nipple, to which is attached a small rubber tube, this in turn is connected to a rubber bulb. The operator on stepping upon the bulb exhausts the air from the same and so allows the weight to drop in the tube which acts like a hammer, on releasing the bulb the weight flies back again, and so the patient may do the malleting by pressing the bulb in his or her hand. This is very simple indeed, and the pneumatic mallet may have a larger future before it than it seems to have at present.

When everything else had been in use more or less, the idea struck Dr. Bonwill, then a country dentist, while on a visit to Philadelphia and passing through the Continental Hotel there, on hearing the click of an electrical apparatus, that electricity might be made useful for the filling of teeth, and he went back to his country home and began experimenting. How far he has been successful we all know or ought to know. His first electric mallet, was the most ingenious one ever made; like all new instruments it was too complicated to be of use to anyone, the malleting was done at intervals of a second, each blow regulated by a clock, which could be hung in any part of the room, and at every move of the second-hand of the clock, the mallet would strike. This was a mallet with a future before it, was the inventor's idea; accordingly he went to Philadelphia and

exhibited it to his friends, and to Dr. Darby in particular. He found encouragement, and went to work to make his mallet simpler, less complicated, and the next mallet which he brought to Philadelphia was without any clock work attached to it, and this is the first mallet which had an automatic interruptor attached to it. This was a great surprise to all who saw it. He again visited his Philadelphia friends; and he was induced to move to that city where he experimented until he had produced a mallet which he thought was perfect; this it was not however, his mallet was still very large, clumsy and difficult to handle. The electro-magnetic mallet was discussed at the society meetings; different gentlemen began to work at the same, and finally a mallet was made, as we find them in the market to-day, for which mallet we are indebted to the late Dr. Marshall H. Webb almost as much as to Dr. Bonwill himself, although the latter gentleman may be called the father of the electric mallet. This is the first and only real automatic mallet which we have, although a great many other mallets are called such. This is the only mallet which works without the aid of the operator, save a slight pressure, which is exercised with the index finger about the same as in writing with a soft steel pen. The electric mallet was taken up by a great many men in different cities, but its use to-day is very limited and we ask the reason why? It is perhaps because most dentists are not willing to take care of a small four-cell Bunsen battery which will take up about fifteen minutes' time, once a week. I think a time will come when the electric mallet will be as popular and as much in use as the hand-mallet is to-day. The blow of this beautiful little instrument is more like that of the hand-mallet than that of any other instrument.

Dr. Bonwill had every reason to be proud of his achievement and he was, but he pondered until he thought of something better or later at least, so he began to construct a mallet, which was to be worked in connection with the dental engine. He succeeded in finishing his engine mallet, but when he had done so, he treated his first and most ingenious invention as a bad step-father will treat a step-child. The reasons are perhaps good ones, but they are not creditable to Dr. Bonwill. Because he was not alone in perfecting the electric mallet, or because he had no pecuniary interest in the same, this is no reason why he should

denounce his own invention, upon which I look, next to the rubber dam as the greatest invention in dentistry. The electric mallet may possess objections, but surely its advantages are equally as numerous as that of any one instrument. While at a society meeting in the city of Philadelphia I heard a gentleman make the remark, "we do not want electricity in our practice nor in our offices." This is about the poorest argument I have ever heard in denunciation of the electric mallet.

Electricity is the greatest invention of the century, and in the short space of time it has been made useful it has done wonders.

Why therefore should we take a back seat among scientific men and say—stop, we do not wish for anything new in our profession, without considering its value. I think this proves a narrowness of mind which we should try to overcome. The engine mallet is no doubt a very good instrument, but it can not be stopped instantly, and the electric mallet can; this might be done with the former, were it driven by electricity, the time for which is near at hand. This is the one of the greatest advantages the electric mallet possesses, it can be stopped instantaneously and set in motion fully as quickly, the blow is a short, quick one, which is what we desire. The electric mallet may be put to a practical test in the following manner: Glass tubes are to be selected of the same dimensions and strength, which are to be filled with gold by different instruments. In using the electric mallet it will be found, that not only more gold can be impacted into the tubes, but a less number of them will be broken during the process of introduction. Tests of this kind have been made by the late Dr. Marshall H. Webb and I know that in every instance the electric mallet proved to be superior to other mallets or hand-pressure.

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EVERY dentist in America will be interested and pleased to learn that the venerable Sir John Tomes, who has been seriously ill, is now, according to late European advices, recovering.

## PROCEEDINGS OF SOCIETIES.

## CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

The regular monthly meeting was held at Newark, N. J., Monday evening, March 21, 1887, the President, Dr. S. C. G. Watkins, in the chair.

## THE PRESENT RELATION OF DENTISTRY TO MEDICINE.

BY NORMAN W. KINGSLEY, D.D.S.

I doubt if any subject outside of a purely scientific one, has recently attracted so much attention among dentists as that embodied in the title which I chose for the address which I delivered before the New England Dental Society. The title I think, more than the address, has seemed to call everybody to arms. Men who never had any opinions before are suddenly vitalized, and dentists with a medical degree, dentists with a dental degree, and dentists with no degree; men whose reputations are international, and men whose existence is a myth beyond a very limited clientele, rise to a question of privilege and clamor for notice. It is an excellent opportunity to get into print and to obtain a little cheap reputation by rehearsing abstract theories which have grown musty with age, and parading them as new and original.

In the discussion which has been called out in dental societies and dental journals I see the facts of history, and the inevitable tendency of the times completely ignored, a weak and silly craving to be something we are not, taking the place of honest self-respect, and a sickly sentimentalism about a parentage which never existed substituted for argument.

A traveller in the Alps who sees in the summer for the first time a glacier is apt to experience a disappointment. He has fancied a great silent river of ice glistening in the summer sun. When the glacier is pointed out to him he sees only a brown gravel bed. The ice which may be hundreds of feet in thickness is covered with the accumulated debris of the mountain sides and the dust of ages. But when this dirty, superficial layer is scraped aside he beholds the great mass of solid ice beneath, translucent as a crystal.

My subject, and the relation of my profession to that subject,



is as clear in my mind as the transparent ice of the glacier, but, like the glacier, it has had recently so much dust thrown about it and so much debris piled upon it that for the moment we may lose sight of the unchanging truth which lies behind.

One of the most serious difficulties an author has to contend with is the use of terms about which there can be no dispute, and this is particularly the case when a single word has a limited and popular meaning, and may also properly be used in a much broader and more comprehensive sense. The term *medicine* is such a word. In its broad signification it is applied to the entire Healing Art, and would comprehend everything under the sun for the relief, as well as the prevention of physical suffering; and would thus include every form of empiricism and charlatanism which would psychologically or otherwise effect the result.

But "medicine" and "medical practice" in the popular mind means the practice of a physician, and as such is only *one* branch of the Healing Art.

No one disputes that Dentistry is also a branch of the same art; to assert, and formally and argumentatively prove it, insults our intelligence as much as would a labored argument to prove that the sun gives light.

There is another confusion of terms in the discussion of our subject that, intentionally or otherwise, is quite sure to mislead the superficial thinker. "Dentistry" and "Dental Surgery" are constantly used as synonymous terms. But Dentistry is a great deal more than Dental Surgery. Dental Surgery is simply one branch of Dentistry, and is that branch which, if it were practiced by general surgeons or taught in medical schools, would properly become a specialty of surgery.

But dental prosthetics in the present condition of the teeth of the race is quite as important a department of dentistry. I ignore the term dental surgery in this discussion because it does not signify or comprehend all that the dentist is called upon to do.

In the discussion of any question there are certain principles and precepts which must be conceded, and that *dentistry is a branch of the healing art* is one, and that *dentistry is a profession* is another. This latter proposition seems to be no longer in dispute, for all my opponents alike assert that it *is*, although basing their reasons on varying grounds.

Just here two radically different views present themselves. I put forth the claim in my address that dentistry was a profession *per se*. And my reasons there given are not answered by the sneers or ridicule of my opponents. They say that Dentistry can not be a Profession except as it is a specialty in Medicine, and I have heard it gravely stated before a dental society that "there are but three professions, Law, Theology, and Medicine."

Now the absurdity in this day of progress of intimating that no new profession can arise, and that every new development of science must of necessity come within the scope and become a specialty of one of those three professions, must be apparent to any one whose mental growth is not stunted by antique dogmas. As well might you say that authors, actors, journalists, artists, engineers, architects, etc., do not belong to "professions" except in so far as they are specialists in one of the three above-named.

On the contrary, I desire to reaffirm the first paragraph of a preamble first adopted at the Rochester Convention of Dentists, in October last, again at a special meeting of the First District Society of New York, and still again by the Chicago Dental Society, and in each instance the vote was unanimous. That declaration assumed that "Dentistry in America is practically an independent Profession, and not subordinate to any other;" and to maintain that declaration I now devote myself.

This paragraph seems to have excited some of my colleagues to a degree second only to that occasioned by the title of my Boston address.

Is the statement true or not? So far as my observation goes, ninety-five per cent. of the members of the dental profession believe it to be true, and those who have the courage of their convictions act upon that belief. The five per cent. who deny its truth are men who have in one way or another obtained the degree of M.D., or are posing as medical practitioners without a degree, and are possessed with the idea that they are a little superior to their fellows. They would have that sentence read: Dentistry in America is practically a *dependent* profession and *subordinate* to—medicine.

*Is this true?* The answer is found in a single glance at the educational institutions where the dentist of to-day acquires his learning. There is not a medical college in the land that teaches

Dentistry, nor even Dental Surgery, which is but a department of Dentistry. I repeat what I said on a former occasion: "If to-day all the medical colleges, together with the entire medical profession, were blotted out, the practice of dentistry would not be injured in the least, nor would humanity, suffering from diseases of the teeth, be one whit the less cared for."

There are now in this country more than twenty dental colleges which profess to teach everything that a dentist needs to know for the practice of his profession, and many of them are fully up to that standard, and at the end of every session each one of them launches forth upon the world a greater or a lesser number that it certifies are qualified to practice the profession of dentistry, and confers upon each one the degree of a "doctor."

Are those certificates lies? The very fact that the dental college teaches many sciences that are taught in medical colleges shows that it is an independent institution. The study of anatomy, physiology, chemistry, etc., does not involve any knowledge of medicine any more than a complete knowledge of the same sciences would make a man a dentist. In both cases they are merely the bases upon which the superstructure is built.

So long as we maintain separate organizations and distinct institutions of learning in which we qualify men to enter and practice the profession of dentistry, conferring upon them a distinct degree, just so long will we be "an independent profession, and not subordinate to any other."

And not until the degree of "Doctor of Dental Surgery" is recognized by the organized medical profession as entitling its holder to membership in medical organizations, can dentistry be considered in any other light than an independent profession, and that condition of things is not likely to ever occur.

A great deal of sentimental gush has been wasted over the maternity of dentistry, and some of our hyper-sensitive brethren are shocked at the idea of the dental profession being rudely torn from the bosom of its mother medicine and becoming "a nameless waif." Medicine was not the mother of dentistry, notwithstanding, Dr. Marvin after great travail found an "umbilical cord which, running back through all the variations of direction and apparent diversity of operation, shall be seen to be attached inseparably and forever."



Dentistry has become what it is by its own efforts and without any fostering care from medicine, either as a profession or an organization. Medicine never was and is not now its nurse. The dental profession has had to fight its way to recognition as a scientific organization in the face of sneers, ridicule and contempt, which even in medical journals has not yet ceased.

That I may not be charged with perversion or misrepresentation, and also to give it a wider circulation, I will quote Dr. Marvin's peroration entire:

"When the ultimate limit of the capacity of this generation shall have been reached, and our successors, taking up the science of dentistry where we leave it, shall carry it on to degrees of efficiency now unrealized, and exhaust their powers upon it till it stands a wonderful product of active human intelligence, a marvel in its resources, its achievements, its beneficent possibilities, even then, inevitably then, unhesitatingly then, will the keen eye of the impartial critic detect the unbroken line of connection, the vital, umbilical cord, which, running back through all the variations of direction and apparent diversity of operation shall be seen to be attached inseparably and forever to the healing art as its legitimate parent, and the instant verdict shall be—*This is a specialty of medicine.*"

Was there ever a greater mass of stilted verbiage crammed into a single sentence?

The "umbilical cord" forsooth! Nature does sometimes produce monstrosities I grant, but in this instance Dr. Marvin must be accredited with the honor of inventing an anatomical appendage to dentistry that is at least unique.

If dentistry had any distinct parentage it certainly was not in medicine. It is neither ignoble nor degrading in this day of scientific attainments for us to recall the historic fact that dentistry originated with the barbers, and in no sense was it nurtured by the organized medical profession. A few men in recent times have been forcing themselves upon the notice of that profession, but there is very little evidence of reciprocity of interest. If some medical graduates in the early days of dentistry in America adopted it as a vocation, that does not make it a specialty in medicine any more than the fact that many of their equally skilled contemporaries who came out of the various branches of mechanic



art makes dentistry a mechanical trade. One of the most distinguished of living dentists stepped out of the gunsmith's shop into dentistry. Another living dentist who will leave his mark permanently on the times sat upon the tailor's bench, and still another whose name is known through all dental literature served his apprenticeship in a wagon shop; and not one of these had an intermediate medical training.

These are not isolated and exceptional instances; there are thousands of others all over the land who have taken the experience derived from the knowledge of some mechanic art and applied it successfully to the development of the science of dentistry, and are doing more for the advancement of that science practically than all the medical practitioners in the world combined.

But, while this is true, no one will dispute that the early as well as the later practitioners of medicine, who gave up medicine for dentistry, must have contributed from their experience to the development of the new science. At least they would be able to avoid in dental practice the mistakes which had led them to abandon the practice of medicine.

What reciprocal interest is there between the practitioners of medicine and the practitioners of dentistry? I have been observing the condition of things in New York City and vicinity for a third of a century and I do not see any. Dentists never go to or take any interest in the medical societies, nor do medical men ever attend the meetings of dentists. When I say *never*, I do not mean that at long intervals some physician or surgeon has not come into a dental society by special and urgent invitation, and for a special purpose, in much the same way that we, on rare occasions, get a clergyman to come in and pray for us, but of their own promptings one comes quite as often as the other, and dentists show an equal lack of interest in the doings of a medical body.

What a commentary it was on "Dentistry a *Specialty* of Medicine," to view the proceedings of the great anniversary meeting of the District Society in New York, in January, 1887! There was the largest assemblage of dentists that the world has ever seen. There was a series of clinics and demonstrations running through all the hours of two days, that was almost bewildering.

ing in its vastness and comprehensiveness. Almost every operation in dental surgery and dental prosthetics that has any value, was performed before that multitude. The evenings were given over for three hours each to papers of great scientific value; and yet during all that prolonged exhibition, out of the five thousand medical men in New York City and immediate vicinity, not one ever showed his face so far as I can learn, nor have I been able to find the slightest allusion made to it in any medical journal; and yet we are told that dentistry is a specialty in medicine.

What a terrible satire all that magnificent contribution to the advancement of our profession is, upon the belittling assertion that dentistry is a specialty in medicine.

I will not allow those who differ with me on this general subject to make me appear as without respect for the profession of medicine. The honest, conscientious, learned, scientific and sympathizing physician is entitled to the highest rank in the estimation of his fellow beings. He is of more value and more importance from the hour of our conception to the moment of dissolution, than the follower of any other vocation, not even excepting he who claims to be our spiritual guide.

If I were to put in language the full measure of my profound regard for the true physician, I should only express what has been better said a thousand times by others, and what every soul of us believes and feels.

But I have no respect for the assumptions that I have heard made recently in a number of instances, *viz*: that "dentists are practitioners of medicine."

The altitude of absurdity is reached when *dentists*, whose title of "doctor" is one of courtesy only, having never received the endorsement of either dental or medical college, declare that they consider themselves *medical practitioners* just as much as any *physician*. Can they not realize that as skilled *dentists* they are respected by the community, including medical men, but that as legitimate practitioners of medicine they are in the same category as charlatans? Webster defines "charlatan" as "one who makes unwarrantable pretensions." Does not this definition plainly include all dentists who, being dentists only, assume that they are medical practitioners? I hate shams. I hate pretense. I would rather try to dignify and ennoble what I am, however

humble, than to pretend I am what I am not. I am a dentist. I am not a medical practitioner, and I prefer to cast my lot with my brethren who are dentists; who will labor to command respect for our merits rather than crowd ourselves into other associations to shine by a reflected light.

If gentlemen wish to practice medicine or be considered practitioners of medicine, let them go to a medical college, take out a degree and then practice legitimately; but do not attempt to get into the ranks of the medical fraternity under the cover of dentistry without even the degree of a dental college.

The subject contained in the title chosen for this paper will not be fully presented without some reference to the position which dentists will hold in the forthcoming International Medical Congress.

At the time of my address in Boston there was almost universal apathy and indifference among dentists in reference to that congress. The belief was prevalent that it was being managed by men who cared more for obtaining favor in the eyes of the medical profession than they did for the advancement of dentistry, and that they were really belittling a great and independent profession by the endeavor to make it a section of a congress into which, by the regulations then promulgated, not more than five per cent. of the whole profession could claim any rights whatever. My views, as expressed in that address, were unmistakable. "As an *independent* profession we had no business there," and my belief that it was unwise to encourage the formation of such a section under such restrictions remains unchanged. But that opinion, even if generally adopted and acted upon, would not affect our profession permanently one way or another.

During the anniversary meeting of the District Society in January, the attitude of that section toward the dental profession was entirely changed, and it was then authoritatively stated that the council of the section had decided to admit all reputable dentists who desired admission and who paid the entrance fee.

The section was thus no longer proscriptive. The question became then one of policy only; and while I believe that it was unwise to attempt to make in a section of a medical congress a full presentation of dentistry, it may be policy at this date to do all we can to sustain it when the doors are thus thrown wide



open. It was upon the strength of such statements that I made an after-dinner speech in commendation and support of the section, but since that date there have been so many contradictory reports of the real intent of that managing council that we are left very much in the dark. If it be the settled policy of that management to admit all reputable dentists irrespective of special invitations the whole profession will rejoice, but if the narrow-minded and somewhat arrogant policy which was shown in the earlier days is to be continued, the section will lose the hearty support of many of its present well-wishers.

Out of the agitation of this subject has come the initial steps for an International Dental Congress, which shall be free to every reputable dentist in the world, untrammelled by laws and regulations which have been prescribed by another profession, and into which they can enter without feeling that the regulations have been stretched to accommodate them.

It is but justice to those who are interested in this movement, that certain reports which have been put in circulation should be corrected. It has been stated that this movement was hostile to the Dental Section of the Medical Congress, and that it was promoted in lieu of that section. Nothing could be farther from the truth.

An International Dental Congress which can not by any possibility be held earlier than 1888 or 1889, shows for itself that it could not be "in lieu" of a section in a medical congress, which would have done its work and been disbanded from one to two years before; and as for "hostility," there is not, and can not be any more hostility between two such entire different schemes, than there is now between the American Dental Association, which represents dentists, and the section of Oral Surgery in the American Medical Association. There is no "hostility" on the part of American Dental Association toward that section in the Medical Association, nor is there ever likely to be, notwithstanding each meets annually.

Any section arrangement does not meet the wants of the dental profession, neither in the American Medical Association nor in the International Medical Congress. We shall not reach the full measure of our fruition, until we see a congress of dentists from all the civilized nations of the earth, whose paramount



idea is the advancement and perfection of the science of dentistry.

PRESIDENT WATKINS. The next name on the list of the evening is that of Dr. Flagg of Philadelphia.

DR. J. FOSTER FLAGG. Mr. President, I have been thinking, as I have been sitting here, what I came over to this place for; I find that I came over for two things; first to get a breath of Jersey air. I have felt better since I came over on this side. I am living now in Pennsylvania, but the home of my heart is Woodbury, Gloucester County, New Jersey. I am half Jersey and half Durham, with a little apple-jack thrown in. I love New Jersey. I love every rock and boulder, and inequality of the landscape from the Palisades down to the Orange Mountains. I love all the sand from the cliffs of Long Branch to Cape May. I love all the shad that cool themselves in the Delaware River on the Jersey side. I say now, as I have said for the last thirty years, first, last and all the time, hurrah for Jersey! That is my State. I am a naturalized Jerseyman, and that is a great deal worse than being born here. And the next thing that I have come over here for was to hear some good, solid, substantial, bottom-rock arguments, if there are any such, for what might be called the other side of the question; whether there was any other than the relation of dentistry to medicine which seems to be the burden of my friend Kingsley's address. It is strange to see how great minds think alike. I think my mind must be a great mind, for I think just like Kingsley. He has mapped out almost everything that I have thought of; and if I were to take his paper and read it through, I do not know whether I could read it any better than he has or not, I might just as well take his paper and read it as my own. There is very little difference. I see through the same end of the spy-glass that he looks through, and can not see that there is any subject for discussion. I do not see what the present relation of dentistry to medicine is, for I do not see that there is any relation, not at all. And it seems to me that it would be rather pushing things on one side for me to follow in this matter now. It would simply be Yankee Doodle first and Yankee Doodle second; I think that would be too much Yankee Doodle. I should like very much to say something after the heavy artillery and the small guns have been brought into action, as I suppose they will be, one don't want to hear the wishy-washy stuff about our parent-

age that our friend Kingsley has referred to; we want to hear something that will meet the arguments that have been propounded by him.

I think this matter is stirring a good deal in the dental profession, but I do not think it is in the medical profession. I do not think they think much about it. But I believe it is time that we should consider it and know where we are. If there are any Jonahs aboard, we shall know their names begin with J., and pitch them overboard to the whale. Therefore I think, Mr. President, that I may wait two or three hours, till about eleven-thirty, and hear the arguments on the other side of the question; then there may possibly be some little points in my paper that will touch upon things that may not have been touched.

PRESIDENT WATKINS. The next name on the programme is that of Dr. Stockton.

DR. C. S. STOCKTON. Mr. President, I think we had better have a little more Yankee Doodle first. Dr. Flagg's paper is next in order, and I can not consent to occupy any of your time until he has presented his views. Let us have Yankee Doodle.

DR. FLAGG. As the *Cosmos* editor recently said, that now Dr. Kingsley had retired, as the result of his after-dinner speech, and had become converted, and the noise of his peculiar opposition was dying away, and now everything was to go on serenely, it can't be possible that Dr. Stockton is the only one we shall have to throw out to the whale.

DR. STOCKTON. Mr. President and Gentlemen: I respond to your call with great reluctance. I had expected that Prof. Abbott and Dr. Marvin would be the men to wield the battle-axe to-night, but Prof. Abbott has gone on a trip South, and Dr. Marvin writes me that his name was used without his knowledge. I simply consented as a matter of courtesy, to introduce the other than the Kingsley side. You have heard Dr. Kingsley, and heard him at his best, but it is the same old story, and the jury is packed. He has appealed to your pride and charmed you with his sophistry, and almost made the worse appear the better cause, and few know how so well as he; but, gentlemen, the one point important in this discussion, viz., that dentistry is a branch of the healing art, he admits, and that is all we ask.

And now, Mr. President, there are to follow me Prof. Flagg,

Drs. Dwinelle and Rich, all known and honored where dentistry is known, and they are crammed full to the very nozzle, for this occasion. (They dined at my house.) So I need not take very much of your time, for I know you are anxious to hear them, for they are our guests.

However, let me say that all that has been written or spoken, or shall be written or spoken, on this subject, will not change the practice of dentistry one way or the other. Everything will go on just about as it has, with the natural and ordinary improvements of the years. I believe that the whole is greater than a part. I know that it is impossible to know all the knowable, yet the more a man does know, the better qualified is he to practice our calling. He need not know all of chemistry or all of *materia medica*, or much about obstetrics, yet a graduate of a medical college can not but have a better foundation for a dental one. The men who began dentistry are to be honored, but the men who have made dentistry what it is to-day, have been and are the educated men,—men who knew what muscle they sat down on, what muscles were put into use when they lifted the arm, and what muscles came into play when the mouth is opened. Let us be round men for the places in the world's history we are to fill. Round men were never made for square holes. A man who has been educated to perform the operations in dental and oral surgery and does them, his relation to general surgery must be that of specialist in surgery. The man who has been educated to administer remedies for the relief or cure of diseases (no matter of what kind) of human beings, and practices on the strength of that education, is certainly practicing medicine, as much as it is possible for any one to do. The foundations of our own, as well as those of all specialties of the healing art, are in a knowledge of the human body, the physiological actions which keep it in operation,—the change to a condition of pathology and the proper treatment of these pathological conditions.

Now, Mr. President, if there are any who call themselves dentists, who are lacking in these fundamental branches of knowledge, they are at liberty to assume that they are in no way whatever related to medicine or surgery, and no one will question their position; but let them be content with the position they take, and let others, who assume a different and more



exalted position, alone. The relation of real dental surgery to general medicine and surgery, is and must be the same as any specialty, as far as practice is concerned. Dentistry is a branch of the healing art. Admit that, and we can ask no more. A word on the point of parentage. A mother has borne a young and beautiful girl; the girl goes out into the world and establishes a home of her own: she rides in her carriage, perhaps, while the mother stays in her humble home. Yet if that daughter is a true woman she never will forget the mother who bore her and brought her into existence, but will honor her on every occasion. So we never will or can forget those who inspired us with the idea of doing good to humanity. But I must not further trespass upon your time, when so many distinguished gentlemen are here and waiting for a hearing, which we are all glad to accord.

PRESIDENT WATKINS. The next name on the list is Dr. Dwinelle.

DR. W. H. DWINELLE. Mr. President, Ladies and Gentlemen: I find myself in an anomalous position to-night. I had supposed from looking at the card of invitation sent me that there was going to be some opposition from the other side of this question, but we seem to be so far all on one side. I refer to the speeches as well as the paper that has been read. It seems to me that my good friend, Dr. Stockton, is quite as much on our side as he is on the other, he has anticipated me in several instances, has even used my very language. I am placed very much in the position of the man in Congress, who, being roughly abused instead of being met with facts and arguments by some honorable gentlemen on the other side of the house, replied: "I don't think I will undertake a rejoinder; it strains me very much to kick at nothing." I am also reminded of Bonaparte and his army, when, in subjugating the various countries of Europe, he reached Spain. In going down the mountains, they came upon a community corresponding to our Quakers—people who never fight. The troop rushed from the hillsides into the valley with a flourish of trumpets, the beating of drums, the screaming of fifes, and the clarion sound of the bugles. Dashing in, behold, no enemy was there, no one to oppose them and no one to overcome; on the contrary the entire community were glad to welcome



them, to hear the martial music and see the display of colors. There was no opposition, and there seems to be none here. Everything that I could say would only confirm the position taken by Dr. Kingsley.

It has been my conviction, and it has been my creed through all my professional life, that dentistry is an independent profession, and I am justified in saying that that was the creed of a large proportion of the founders of our profession, I know it was the hope of Harris, and of Townsend, Hayden, Hudson, the Parmly's and others—that the day would come, which I believe is now dawning, when ours would be regarded as a distinct and learned profession, and not as a specialty in medicine. I have no doubt that could those noble men speak to us now, it would be with expressions of joy and satisfaction, that the fruition of their hopes was about to be realized.

Dentistry is composite, broad and far embracing in its character. With many other departments of art, science and mechanics, it includes medicine, but it is not included in or absorbed by it, nor is it a specialty of it any more than it is a specialty of any of the many supplementaries which contribute to its establishment.

It is no argument against us to say that as we could not do without medicine, therefore it is a specialty of it; so we could not do without chemistry, histology, mechanics, metallurgy, and other departments of the arts, but this does not make us a specialty of either of them.

If, in all the medical colleges, they would teach dentistry in all of its branches, and in all its completeness, making the degree of M.D. cover and include the qualifications to practice dentistry, then would there be some reasons for saying, and not until then, that dentistry is a specialty of medicine, but this they have not and never will do.

After all the comments and criticisms made upon Dr. Kingsley's first paper, supplemented as it has been here to-night, his arguments remain unanswered and unanswerable. That position is impregnable.

DR. FLAGG, Mr. President, the remarks of my friend, Dr. Dwinelle, have carried me back almost fifty years, when as a boy I sat in my father's and uncle's office and heard the conversations

of those gentlemen, who had the idea at that time that dentistry was in some way closely related to medicine. I have heard a great many conversations that have been spoken behind the door and behind the scenes in my career in dentistry, for I was born a dentist, and in consequence of my father's and my uncle's associations with the profession in that early time, I, when still a boy, came in contact with the elders of the profession, such as Harris, Hayden, Westcott, the Parmleys, and a great many of those men who used to stop at our house and talk over these things. I remember when Spooner came along with his arsenic. I do not remember the Lafayette period, as was suggested by a gentleman in speaking of antiquity; he said he remembered the great Andrew Jackson parade when Jackson was made President, but he did not remember the Lafayette parade. I do not remember the Lafayette parade, but anything this side of the Lafayette parade in dentistry I pretty well remember. I well remember Hayden. He was a man who resolved to make dentistry his profession. He was not an educated man up to that time, but he educated himself in medicine, and although not a graduate, he received the complimentary degree of M. D., as some do in these days, and not only from the Virginia and Maryland schools, but also from our Jefferson school in Philadelphia. He was a double M. and a double D. So I say that my friend Dwinelle's remarks have carried me back fifty years when that talk was being indulged in—when those gentlemen, as he said, expressed the ideas and the hope that, as in fact we were nothing, it behooved us to become something, and I think we have.

I do not know that I can say anything about the present relation of dentistry to medicine, because I can not see any. I have not seen the relation of dentistry to medicine.

I tell the young gentlemen who come to our school, not only that any knowledge outside of our school would be superfluous (laughter), but I think it would be detrimental to them to spend their time studying medicine; and I ask any man—even the man who says the degrees are all lies—if the best men for making intelligent graduates in dentistry do not come from other sources than the medical colleges, where they get their brains crammed with the erratic ideas that are peculiar to a medical college. I do not know one complete round dentist. I know many dentists

who are brilliant in some particular line, but I do not know one round dentist. Give me a man who can make first-class rubber-plates, and let me put him at continuous gum work. Give me a man who can make first-class gold fillings, and let me ask him a few questions about the plastics. But the round men are not about.

Now, this question of whether we are allied to medicine or not has been discussed outside of our own body, as well as inside. Many of you know that this thing was worked over for days by a committee appointed by the American Medical Association, and the result of their work was that they said there was no connection between them—they simply said there was nothing in it. That was the term they used. Now about Dr. Stockton's beautiful girl. O my! The beautiful young girl that went out to ride in her carriage and left her poor old mamma at the wash-tub! The beautiful young girl came back and asked her mamma if she was her daughter, and her mamma thought over the matter a good while, and says she, "I think you ain't." [Great laughter.] That is the way our alleged mother shirked us. I feel as though this was my circus, as Dr. Stockton has said. In Philadelphia, before the Odontological Society, I would not dare to call it a circus; but this is my home; I feel that I am talking on my Jersey hills. I would not call it a dung hill, but this is my farm. If it were my dung hill I should crow to-night; but this is my farm.

Under all these circumstances I wish it distinctly understood that I can not write a paper upon this question without saying something in relation to this proposed Dental Section in the International Medical Congress. And I merely wish to say that I have no antagonism to that section whatever. The gentlemen who are conducting it, like Dr. J. Taft, you always know where to find. He is like the admiral, who, when the great discussion took place between the king and the people, took his stand solidly right on the fence. [Laughter] Now, there is to be an International Medical Congress, and some of us have been invited to attend. I was one of the invited. There were a good many others I knew—my friend Pierce among them.

I do not care about the Dental Section in the Medical Congress. I do not know anything about medicine. I don't believe

I could diagnose a case of measles from a case of small-pox. I don't believe I could diagnose a case of stomach-ache from a case of whooping-cough. At the same time I have no antagonism toward the Medical Congress or a Dental Section in it. If the dentists want a section in the International Medical Congress, I have not the slightest objection nor the slightest antagonism to it. It does not affect me one single iota.

DENTISTRY MORE THAN A SPECIALTY IN MEDICINE.

BY J. FOSTER FLAGG, D.D.S.

Under existing circumstances, and in view of the tone of recent editorials in several of the leading dental journals upon the topic which calls forth this paper, I deem it not undesirable that a word should be spoken which would show emphatic dissent from all such emanations—

That dentistry was once decisively declared as not pertaining (as a specialty) to medicine, at a time when the "Fathers of Dentistry" really thought that it was not too far away for recognition, is not only an accepted fact, but it can not be too well remembered that it is that fact which gave to dentistry the first impulse toward the eminent result which has accrued from its fifty years of work.

Rapidly and resistlessly has it taken its place among the distinctive callings of modern civilization as separate from all others; unlike, in any particular, any other profession; having its own peculiar methods, means and appliances, its own peculiar educational needs and facilities, its own peculiar text-books and periodicals, its own peculiar depots of supply, and finally, *most decidedly*, its own peculiar "specialties."

And now, with all this marvellous demonstration of professional ability, it is asserted from the January editorial of the *Dental Cosmos* that, "If, now, it be asked, should dentistry be taught and practiced as a specialty of medicine?" A field of thought is opened in relation to which "much can be said on either side, and good may be accomplished by its thoughtful discussion."

It seems to me that the time is past for even the *doubt*, to say nothing of the discussion, of the question as to the proper teachings and practice of dentistry.



Among the several attempts to incorporate the teachings of dentistry with that of medicine all have proved utterly abortive.

Every university or medical college that has attempted the work has been forced to establish just as *decidedly distinctive* means and methods for that purpose as for the teaching of any other distinctive calling, and more than this, it has been found "expedient"—this is their own word—to confer, as the mark of a so-called "specialty," either the *distinctive* degree of D. D. S., or the less known, but none the less distinctive, D. M. D.

And I would ask if the results of this change of base are such as to warrant the conclusion that great advance had been attained? Have these "adjuncts" put to shame the regular colleges of our profession? Have any medico-dental periodicals appeared which have "filled a long-felt want" in consequence of the shortcomings of the *Cosmos*, the *British Journal*, the *Register*, and the *Independent*? Have the new combinations, the new medicaments, the new materials, the new *ideas* come from these? Has dentistry maintained the status of its progressive leaps through aid from these extraneous sources?

I need not answer these questions for dentists, for they know all about it; but, in turn, what do any medical men know of it?

I reply—practically nothing. There is a gulf between the "great" practice of general medicine and that of dentistry, so wide, so deep, and so impassable that little or no communication exists across it as the result of even present interests, and as diphtheria, phthisis, diabetes and spinal meningitis, exercise most earnestly the medical mind, so do pulpitis, the ideal filling material, bridge-work, implantation and automatics attract the attention and command the admiration of all progressive dentists.

And yet we are told there seems to be no valid reason why dentistry—even though practically an independent profession—should not accept a section in an otherwise purely medical organization? We are told that "reasons" have been given why all dentists should unite in earnest effort to make the Dental Section of the International Medical Congress "a credit to the profession."

To the profession! To what profession? If dentistry is a profession why should it make strenuous effort to make of itself a "Section"?

And we are also told that "personal piques and prejudices" should be put aside.

This is the "unkindest cut of all."

That the earnest, heartfelt, conscientious efforts upon the part of those who, for a lifetime, have worked for the establishment of dentistry as a profession, separate and distinct, should now be stigmatized as "personal pique and prejudice," is an insinuation which could not have been meant as it would seem to read.

And more, as though the relation of dentistry to medicine was something definitely settled, advice is dictatorially given as to what the various societies "should" do at regular or *special* meetings in assuring sympathy and support to the officers of a "Section," that has evoked such decided indifference and even denunciation from many of the representative men of "the profession."

And more, it is asserted and re-asserted that in this medical congress "anything less than a creditable presentation of dental science and art would be emphatically *discreditable*."

So far from this, I think that time will show that if a Dental Section is a "grand success" it will produce no more than just a ripple on the surface of the dental waters—and inversely, if it should prove a "perfect fizzle," the profession of dentistry will march on just as steadily as would a corps of veterans upon a battle-field.

Dentistry is already far beyond the influence, much less control of any International Medical Congress.

It has practically lost interest in most of all the subjects which would naturally be discussed in such a body.

I feel the statement as entirely true, that emanations from that learned convocation would be read by dentists with *only* such interest as would be accorded them by any other equally intelligent class of gentlemen.

I feel that dentistry and dentists will be no more influenced by the medical congress than will pharmacy and pharmacists, or electricity and electricians; and this I say with full recognition of the probable importance of that august body.

Holding these views I am here to-night to lend what aid I may for dentistry, and to say with one of the brightest of our

Western workers, "let us learn to save teeth, and let medicine take care of itself."

Dentistry is said to be a branch of medicine—its "parent" tree. It is not so. It is no branch; it never was a branch. This is so true, so markedly, so absolutely true, that even early in the history of its growth, when claims of branch-hood were advanced, they were officially investigated by the so-called "parent tree" and *the verdict was against them.*

This was then accepted, and Dentistry, finding itself dependent upon its own resources, struck out boldly *in its own behalf.*

It threw out roots—by no means roots for medicine!

It gained a trunk—not in the least a medical trunk!

It sent out branches as unlike anything that medicine had ever dreamed of, as is a fertile vale unlike a barren desert.

And so it grew, until it has become a tree—a tree of fair proportions, from which millions, aye, tens of millions of suffering humanity gain comfort *every year!*

This attribute of root development is strangely overlooked, and all the famous growth that comes from it is quietly ignored.

This I protest against. I advocate a full appreciation of this root support. I give my voice to free annunciation of this famous growth.

A specialty of medicine indeed! Medicine and Dentistry are kin, because both work for suffering humanity. But does that make of dentistry a "specialty"? Are there such things as Gynæceistry, Auristry, Oculistry? and, if not, why Dentistry?

It is because ophthalmic, aural and gynæcological practice are *rooted* in medicine.

It is because few—*very few indeed*—practice these "specialties" aside from general practice.

It is because teachings are given in these from special chairs attached to medical colleges—one chair for each specialty.

No *extended* special equipment is required, no large laboratories, with their numerous and complicated fixtures; no large clinic rooms, with their expensive furnishings; no NEW DEGREE, to indicate peculiar kind of knowledge. For dentistry all this is changed. Three or four extra chairs are needed for even *ordinary* dental teaching.

Demonstrators are needed to instruct in application of these

teachings, and if the branches upon which it is so constantly insisted the *specialism* of dentistry depends, are left to medical men to teach, they give but poor support indeed to those requiring dental information.

*Anatomy!* Of what avail are pelvic measurements to dentistry?

Why should dentists give days of study to carpal and to tarsal bones?

Why should dentists be drilled exhaustively in muscles of the legs and back and arms? A sculptor or a figure painter should know far more of these than *must* a dentist.

But of anatomy such as *dentists* need, they should know thoroughly. The more, thus far, the better dentist.

*Physiology.* We find it here the same. A fair amount of general physiology is quite sufficient for the dentists' purpose, but dental physiology they can not know too well; and do they get dental physiology from medicine? Far from it.

Where do they get it? From dental text books, written by dental practitioners, and from work done by dental investigators directly in the interest of dentistry, without one thought of medicine.

*Chemistry and Metallurgy.* Chemistry is not medicine, nor of medicine. Medical chemistry is a specialty of chemistry, but so is dental chemistry, and medical chemistry and dental chemistry are as distinct as two specialties of one science well can be.

And when we come to metallurgy, medicine knows and cares but little for it; consequently says but little about it, while dentistry rolls it over its tongue as a delicious morsel and teaches it almost exhaustively.

*Materia Medica.* Here we can but laugh! Look at the medical *materia medica*. Look at the United States Dispensatory, Wood and Bache, fourteenth edition! A wonderful description of eight or ten thousand (it matters little which!) salts, roots, barks, herbs and compounds, ointments and tinctures, gums and extracts, with information as to what they are good for, and who says so!

As dentists view this heap of printed matter, it becomes a serious question as to whether it has *any* value.



To the "parent," medicine, it is priceless ! but to the so-called "child," dentistry, it is practically useless.

Not a tincture, from that of aconite to that of iodine, is made as dentistry would make it. Not an ointment, from *unguentum aconitiæ* to *unguentum hydrargyri oxidi rubri*, is prepared as dentistry would prepare it, nor are they half so good ! Pastes, tinctures, solutions and compounds, in daily use by dentistry, are not mentioned ; and yet on knowledge of all these depend the comfort of the patients and the success of the practitioners of dentistry.

A specialty of medicine ! And when it is said that dentistry is "not a specialty of medicine," it is called a "bold declaration."

As though all truths were not bold declarations !

Was it not bold to say the earth moved ?

Was it not bold to say the earth was round ?

Was it not bold to say that "all men are created equal" ?

If to say that "Dentistry is not a specialty of medicine," be bold, the declaration is found in grand good company, and, like the others is *as true as they*.

And even this review, while making a "*vital umbilical cord*," attach dentistry to medicine through several generations (a most peculiar attachment between parent and child even through one generation), completely deprives itself of every particle of force by saying "Amen" to the position that "Dentistry is *more* than a specialty of Medicine." A boy is a boy, and a man is a man ; and a man is not a boy, simply because he is *more* than a boy.

This is just what our whole argument means. No one has ever said that dentistry never was in any way connected with medicine. No one has ever said that dentistry was not much indebted to medicine. No one has ever said that dentistry did not think—fifty years ago—that *it was really* a specialty of medicine. But what we do say now is, that dentistry has grown beyond all this ; that dentistry owes *vastly more* to other sources than it owes to medicine—that it recognizes its indebtedness most gratefully to all—but that it feels its own ability in prehension, digestion and assimilation, and that it asserts, through these, its claims to *individuality*.

The more one knows of dentistry, the more these claims are recognized.

The less one knows of dentistry, the less these claims are realized; and this is why we find M.D.'s both in and out of dentistry, advocating for dentistry such marked dependence upon medicine.

This is their view, but I esteem it fortunate that they are few and we are many; that it is widely known and recognized that M.D. views of D.D. S. affairs are based upon such superficial knowledge as that they may, with perfect truth, be styled *absurd*.

For the most part they are treated just as they deserve—passed over silently—but when presumption steps too far, and out of bounds, it is met as our Prof. Arthur met their great Prof. George B. Wood, and proved to be gross "ignorance."

Year by year this state of things increases.

As dentistry expands, as operations, instruments, medicaments, and materials, extend its possibilities, so lines of demarcation, indicative of a distinctive calling, augment in sharpness and become decisive.

Instead of approaching in the least more close to medicine, there is with every *dental* class that graduates, whether from dental college or medical university, increased preponderance of D. D. S.,—doctors of dental surgery; neither more nor less—dentists to practice dentistry—men who recognize their equal debt to all the varied sources from whence is culled the pabulum for dentistry. Men who propose to live by dentistry. Men who will think and delve, experiment and work, to broaden dentistry. Men who will teach dentistry, *dentistry*, DENTISTRY, until all thoughts of any dependence except *independence* shall have been forgotten.

DR. JOHN B. RICH. Mr. President, Ladies and Gentlemen: When I received the invitation of this Society to be present this evening and take part in the discussion of Dr. Kingsley's paper, "Dentistry not a Specialty in Medicine," I naturally supposed that there would be two sides to the discussion, but so far there appears to be but one side, for no real arguments have been presented in opposition to the views expressed in the above paper.

Those who are opposed to those views assert that dentistry is

a specialty of medicine. When I began the practice of dentistry the members of the medical profession would not recognize dentistry as a science. They distinctly asserted that it did not belong to, or have any connection with, the profession of medicine, and would not admit those who practiced it to fellowship with them, even when they possessed the degree of M. D. And they were right; we did not belong to their profession, and the science of medicine was not the parent of dentistry, nor did any one connected with that science claim that it was. What is the duty of a parent to its child? Is it not to take care of it, to foster and train it so that it may grow in strength and health constantly; to educate and give it all the culture of every kind that will tend to make its career a successful one? Has the science of medicine done that for dentistry? Even if it had been willing to assume the position of parent, was it capable of imparting the necessary training and culture to fit its offspring for the profession of a dentist? Certainly not. Suppose a young man, desirous of adopting dentistry as a profession, should go to a medical college and ask the professors to educate and prepare him for the practice of dentistry. Would they comply with his request? Could they if they desired to do so? It would be absurd to ask them. And now, when dentistry has established itself as a distinct science, who are they that claim that medicine is the parent of dentistry? Not the men who practice medicine, but a few dentists who are ashamed of the profession by which they earn their living.

A specialty of any science or art must have grown entirely out of what it claims to be a specialty of, and when in its necessities it draws largely from other arts and sciences, and incorporates what it draws into its own system, it ceases to be a specialty of any *one* science and becomes a distinct science. Dentistry is a science of that kind. It is composed of parts of many arts and sciences, and therefore can not be said to belong to any one of those from which it has appropriated a part to add to its own system, but in its whole must be considered as a *distinct* science. For the successful practice of his profession, a dentist must have an intimate knowledge of a number of arts and sciences, a knowledge of which is not at all necessary for the

practice of medicine. How absurd it is, then, to call dentistry a psecialty of medicine.

Dental surgery proper, and oral surgery, in their limited spheres, are undoubtedly specialties of medicine; but the cases that would legitimately come under those heads are very few, and would not require many people to attend to them. As I have remarked before, I have not heard during this evening a single argument of any weight advanced to disprove the sentiments of Dr. Kingsley's paper, and therefore I do not know that I have anything further to say upon this subject. I do not wish to reiterate what Drs. Kingsley and Flagg have so well said. They have expressed the sentiments that I entertain on the subject, and which I have publicly declared during the whole of my professional life. I am proud of being a dentist pure and simple, but I am not at all proud of the degree of M. D. which I possess.

PRESIDENT WATKINS. Dr. Atkinson has been called for. Have you something to say, Dr. Atkinson?

DR. W. H. ATKINSON. He always has something to say, Mr. President, but he does not want to speak to prejudiced or unwilling hearers, or those who assume to have surveyed fully a field that they have hardly got over the fence into. If you wish to hear me, I have something to say.

I hate red tape. I hate a lack of respect for the blessed mothers who bore us, that makes us follow the lead of men who are our inferiors. I am a dentist of dentists, and so pronounced when standing alone, and when the men who are talking here to-night were against me in that advocacy, and said I was crazy and called me out of the clouds.

What have we here to-night? Simply the same old trouble that occurred between the surgeons and the barbers, when the barbers had not studied the foundation principles of the anatomy and physiology and therapy of the human body, but had acquired a skill with their fingers, that the shrewd men called surgeons, felt that they could utilize for a small amount of money paid to them, ordering them where to cut, that they might get large fees and pay a small fraction of them to the men who did the work, and effected the good that the knowledge of the principles of



healing possessed by the surgeons enabled them to direct. Had we the record we could see where they made errors.

What ails us? I am with and against every speech that has been made to-night, because they are practical; they are not inclusive, and they are not humane. We want something better than specialists; we want something inclusive and general.

Classification in society has come down to us from the time when strong thieves assumed to run all governments, from the religious to the secular interests of mankind. They made classifications that we are soft enough to yield to, and talk about the difference between a profession and a trade. Away with it; let it go the nethermost hell whence it came of darkness, and of doubt, and of lack of the influence of the mother-god, the love side of the infinite love and wisdom that we have been taught to call our Father in heaven. What matters it if the ear say to the eye, I have no need of thee. Do you "catch on," as the boys say in the street? What shall we babble nonsense for, and prate about erudition and intelligence without being able to justify it. It was a blessed influence of the old foggy medicine men who did not know what they did when they rejected Hayden and Harris and the other men who gave to dentistry a name and a place. Harris was an M. D., and several others of them were M. D.'s, although there has not been a single degree honestly given, because they put more in the degree than there was in the man; and I am endorsed by Dr. Flagg in that. They think it is sacrilege for me to refer to the Divine in the way I do. A man who has a fetish in his pocket that he has endowed with divine power to help him through difficulties; if you laugh at him and tell him it is nothing, it is sacrilege to him. God help the man who is afraid of this kind of sacrilege. Paul said, when meat was set before him that had been offered in sacrifice to an idol, and his weak brother saw him eating it, "I would not eat meat while the world stands if it caused my weak brother to offend." The idol is nothing, and the meat is nothing; and all these definitions and distinctions between a profession and a trade are nothing. Oh, God! what a vail of hypocrisy and phariseeism has hung upon and around, and through and about all that. Who is ready to cast the first stone? Who of us has not been scotched with the desire to be with the supposed great? Who of us was willing

to accept the truth as it was revealed to him, and take the consequences? And when we do that we will be put upon the cross, you bet your last dollar. There is no difference in the deep conscience, and affection and intellect of every man who has spoken who had the grace to think and speak soundly upon this subject. The time is past when we need to lay these foundation stones. We had a great deal better rest than to make selection of those that are not fit to be put into the building. We had better say that we have a calling that has charge of the mouth and the teeth, or the appendages, and not say that we are a distinct profession. I have heard it said recently that there were only three professions. What is that but simply affirming the statement I have made that this is an inheritance from the old times of the thirteenth and fourteenth century old-fogyism that we have endorsed and sealed. That is what we are laboring under, so that we are jealous of anybody that may exceed us. I have been a teacher these many years, and I grieve when righteousness is not present, and I exult in righteous conduct. Some men can hardly tolerate an equal, and a superior they crucify every time, because they fail to see the full equation of the whole question.

Think of the folly of men saying that it is not necessary for us to understand anything about the circulation! What are we made of? We are made of respiration, nervation and circulation. And if we do not understand that in its finest and largest sense we will never be able to diagnose a single case outside of the merest empiricism and external appearance. Just in the ratio of a man's culture is he able to diagnose cases; and just in the ratio of his moral strength is he able to listen to that which seems opposed to what he thought was his highest perception of truth. The man who is not ready to hear, without being offended, his dearest ideas set at naught by other men, and to listen to the different perceptions of his pupils, is not fit to be a teacher. There is where we have not been led right in the God doctrine, from the pope down. They have taught morality, but they have not lived it.

DR. E. S. NILES.—Mr. President, Ladies and Gentlemen: I did not come here to-night with the anticipation of speaking upon this subject, but since it has been discussed by the

gentlemen present, there are several points which have struck me very forcibly. I do not think I have considered this matter with so much interest since it was first agitated at our New England meeting. I must take the medical side of this question. I do not believe in trying to lift a profession by the boot-straps. We must prepare ourselves with the knowledge which will place us beside a noble and great profession.

In the arguments which have been brought out here to-night on both sides, I think there is one point upon which we agree, and that is that dentistry is a healing art.

Again the statement is made that dentistry is not an out-growth of the medical profession, that it is not based on the medical profession at all. Let us take the studies which we are called to pursue in course of preparation for practice in our profession. First, all must admit that it is necessary to study physiology. Did dentistry create its knowledge of physiology? Are the great physiologists of to-day in our country, or in other countries, in the ranks of the dental profession? Then physiology is a root of the dental profession. It is also a root of the medical profession, and dentistry gains life and support therefrom. Our knowledge of the physiology of mastication and deglutition, and secretions of the oral cavity came from the medical sciences.

Let us take anatomy. Who first dissected the fifth pair of nerves? Was it a member of the dental profession? Upon what is based our knowledge of pathology? Is it upon works strictly in dental literature, or upon works of medical literature? It is plain to be seen that here are three roots then which enter the medical profession, physiology, anatomy and pathology. I might go on if I had time and enumerate many other branches of medicine from which we receive vital support. Take away from us medical *materia medica*, and what have we left of dental *materia medica*.

I am not now prepared to give you authorities upon these subjects, but there is a vast field for argument in this line to refute what has been claimed here to-night.

Gentlemen, our main object is to do good to our fellow men, How can this best be accomplished? By asserting and maintaining ourselves as an independent profession, or by joining hands with the medical profession. They have need of us. No man or soci-



ety will ever place an insurmountable barrier between the medical and dental professions. They are growing together, and it is inevitable that the two sciences will be one science. Dentistry must be as much a specialty of medicine as surgery. I have said that the medical profession have need of us. They are ignorant of a great many subjects in which we could enlighten them. They have made a great many thrusts at us indirectly as a profession, but the time has come when they can not afford to do this. I have practical illustration which goes to show this, it came to me to-night while coming from New York to your city. I sat in the seat with a young lady, immediately in front of me a dental friend was sitting and we were discussing this subject. The young lady overheard the remarks that were made, and after I was through talking with my friend she said to me, "Are you from Boston"? I said I was. She said, "I am from Boston." After that point was settled I suppose she felt very free to express her troubles to me. She said, "Are you a doctor?" I said I pretended to be somewhat of one. "Well," she says, "can a tumor be formed from a decaying tooth?" I told her that I had heard of such a case. "Well," she says, "I have got trouble with one of my teeth and face, the doctor says I have got a tumor. He is a very prominent physician on Broad street, Newark, and has been treating me for several weeks for a tumor in my mouth. I insisted upon it that he was mistaken and that something was the matter with my teeth, but he said, 'Oh, no; you have got a tumor, and I must treat you systematically to scatter it.'" He treated it till the 'tumor' broke on the outside, and then she knew enough to know that she had an ulcerated tooth and it had pointed on the outside, near the lower left six year molar. She pulled down her cloak and showed me the place as large as a silver dollar, and wanted to know what I thought of it. I told her that as far as I could see I agreed with her, that it must have been an ulcerated tooth. I gave her my card, with Dr. Stockton's address and told her to call round and see him, I shall be interested in what he has to say after his diagnosis. From all appearances this young lady had been suffering from an abscessed tooth which had discharged on the outside, and will probably disfigure her for life. Here is a case where the medical profession need some knowledge of dentistry. Shall we refuse



to impart that knowledge and extend the right hand of fellowship? And on the other hand shall they refuse to extend the right hand of fellowship to us?

Gentlemen, dentistry is getting to be more and more a specialty of medicine. It can not be avoided. If I were to recommend to a young man, as to how he may best enter our profession (as I have just been called upon to do), my duty would be plain to urge the necessity first, by taking a course in medicine and obtain a medical degree, and then prepare yourself in the dental specialty; medicine will be required of you at your prime of life in the profession.

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Thin manilla tissue wrapping paper, about two thicknesses, will be found to answer admirably in causing a metal plate to leave the lead counter die after swaging, and if used in from four to six folds an extra counter die will be unnecessary, its use producing a sharp definition not excelled by either tin or Babbitt metal.

On March 26, 1887, a number of New York dentists convened at Martinelli's, to celebrate the fiftieth anniversary of the entrance of Dr. John B. Rich into the dental profession. The doctor is in the prime and vigor of robust manhood, and we hope there are still many years of usefulness in store for him.

At the annual meeting of the First District Dental Society of New York, the following officers were elected: President, W. W. Walker; Vice-President, J. F. P. Hodson; Secretary, B. C. Nash; Treasurer, C. W. Miller; Librarian, J. B. Littig. Delegates to the State Society (to fill vacancy), C. F. Ives, for four years, John I. Hart, Meyer L. Rhein.

Drumine, the latest reported local anæsthetic, has been tested by Mr. A. Ogston, of Aberdeen, Scotland, and found to be of no value whatever. Numerous experiments were made on patients, also on a medical student and the experimenter himself. No loss of sensation was experienced by any of the subjects. Late papers from Australia seem to favor the idea that the reputed therapeutic properties of drumine are mythical.

By letters from Russia we learn that the condition of dentistry in that country, is not as encouraging as might be desired. There is but one school, at St. Petersburg, and although the theoretical branch is taught with some degree of perfection, the operative and mechanical branches do not receive as careful attention. The generality of the profession throughout the land is very inferior, there being but few competent and skillful operators.

The annual meeting of the Chicago Dental Society was held on Tuesday, April 5, 1887, at the Ethical Society Rooms, Randolph street, Chicago, Ill. Dr. T. B. Wheeler read a paper on "Separators and Matrices," after discussion of which followed the election of officers: President, J. G. Reid; First Vice-President, J. A. Swasey; Second Vice-President, G. H. Bentley; Recording Secretary, C. N. Johnson; Corresponding Secretary, W. B. Ames; Treasurer, E. D. Swain; Librarian, A. W. Harlan; Member of Board of Directors, G. H. Cushing; Board of Censors, L. L. Davis, J. W. Wassall and B. L. Rhein, Chairman.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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EDITOR: A. W. HARLAN, M.D., D.D.S.

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## THE PRESENT STATUS OF DENTISTRY.

At this time it is hard to determine which is the leading question of the day—dental science, dental politics, or dental invention. For our own part we are interested in all the questions which are under discussion, and it is the policy of the **REVIEW** to give all questions a hearing, when unaccompanied with personal spite, malice or grievances. We present in this issue the papers read and the discussions before the Central Dental Association of Northern New Jersey, at the March meeting. While much diversity of opinion exists in the minds of many dentists, regarding the relation of dentistry to medicine, we hope that all will be benefitted by reading both sides of the question and after digesting the various statements come to some conclusion that will be logical and final. Very few will question the truth of the statement that dentistry as practiced by the majority of dentists in every country in the world, is not practiced as a specialty in medicine. The majority of dentists are not in possession of dental degrees, to say nothing of the still smaller minority who are doctors of medicine engaged in the practice of dentistry. This statement, however, does not affect the question of the desirability of all dentists being educated in medicine. We will not at this time discuss the point, but another, which is now of greater importance.

No one will question the necessity of the dentist being

educated in the dental school prior to beginning practice. Will any one affirm that after his exit from a dental school, he is a specialist in medicine, by virtue of his training or the thoroughness of his studies in obtaining the dental license to practice? Does such training, no matter how complete, authorize the dentist with a dental degree, to practice dentistry as a specialist in medicine, without adding to his dental license the medical license? We say most emphatically that it does not, and that no state board of health or of medical examiners will issue a license to practice medicine on a dental degree, unless the applicant presents in addition a medical diploma, or submits to an examination and obtains it in that way. A great deal of idle talk and speculation has been indulged in about dentists being specialists in medicine in some hazy way, but from the legal standpoint dental degrees are recognized by state boards of dental examiners, and none others except on examination, and the same is true of medical boards of examiners. They always insist on the presentation of diplomas from medical colleges, or require the applicant to submit to an examination. The facts are about as follows: There are now three or four per cent. of the dentists of the entire world, who have regular medical qualifications, and they are engaged in the practice of dentistry as specialists in medicine. About two per cent. are Ph. G's, B. S.'s, or F. C. S.'s, and they do not practice as specialists in medicine. As near as can be estimated twenty to twenty-two per cent. hold the degrees L. D. S., D. D. S., M. D. S., D. M. D., D. E. D. P., or hold certificates from state boards of examiners, or licensing bodies in foreign countries who do not confer degrees. Just how many of these who believe they are practicing as specialists in medicine, it is difficult to estimate, probably not more than one-fourth at the outside. From this estimate, based on the statistics of all countries, we are led to conclude that about seventy per cent. of the dentists of the entire world are without medical or dental qualifications attested by colleges or licensing bodies, and the claim is put forth that dentistry is a specialty in medicine! Humiliating as it must be, here are the facts obtained from dental registers, almanacs and reports of boards of examiners; and the tabulation of the number of graduates from dental schools throughout the whole world, and comparisons with directories of

dentists from all sources. Let the discussion go on, as we believe much good may come from it, but until a better showing can be made than this, let us not felicitate ourselves on the place which we may occupy, until we have gained it.

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#### INDIANA STATE DENTAL ASSOCIATION.

The executive committee of the above association will shortly issue a programme for the forthcoming meeting in June, which will be held at Lake Maxinkuckee, Ind. For several years past the meetings have been held in Indianapolis (with one or two exceptions), and for various reasons have not attracted many dentists residing at a distance. It is hoped that the list of essayists and the number of clinics which are to be given by prominent operators, will cause every progressive dentist in the State to forsake, for a few days, his home and practice, and make this the beginning of a new era in the history of the association. The profession as a whole has failed to contribute to literature or invention what it is undoubtedly capable of doing. And for its own credit, as well as for the benefit of the younger generation within the borders of the Hoosier State, the members should throw off their lethargy and make this meeting a grand success.

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#### ILLINOIS STATE DENTAL SOCIETY.

The twenty-third annual meeting of the Illinois State Dental Society will be held in Jacksonville, Ill., Tuesday, May 10, 1887, and the sessions will continue for four days. Dentists from all parts of the country are invited to be present. The executive committee have prepared an excellent programme, and we anticipate a successful meeting. Every dentist in Illinois ought to feel it his duty to be present. Dr. Black will endeavor to make it profitable for every dentist to witness the workings of his incubator for the culture of microbes. Jacksonville is a city where several State institutions are located, and is in every way a delightful place to visit during the month of May. Turn out in full force and be prepared to speak on any subject which may come up for discussion.



## A NEW DENTAL LAW FOR INDIANA.

The Revised Dental Law of Indiana has some features in it which we do not remember to have seen in any similar law in the United States. The Governor of the State appoints one member, the State Board of Health another, and the remaining three members are appointed by the Indiana State Dental Association. How this will work in promoting the best interests of the profession remains to be seen. The fund created by the registration and licensing of dentists, goes into the treasury of the association, and the members of the board are to be compensated by the society. Registration is a new provision in the law. The possessor of a diploma must satisfy the board that the college issuing it is reputable. Members of the board have authority to issue temporary licenses on application, nothing being said about an examination to test the applicant's fitness for such a permit to practice. Altogether it is a great improvement over the act passed in 1879.

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## FOREIGN CORRESPONDENCE.

## LETTER FROM GERMANY.

*To the Editor of the Dental Review :*

SIR :—Your letter of December 17th was duly received, and in reply will give you my opinion as to the condition of dentistry in this country. Dentistry is going to \* \* \* \* in Germany ; whoever tries to labor earnestly and honestly is soon pushed to the wall by the masses of young—and, I am sorry to say, swindling and libeling outcrop from the German dental schools now in existence. The *alpha* and *omega* of every young German *Zahnarzt* is to look down from a self-esteemed height of scientific(?) eminence upon the American dentist, with the expression of contempt as well as on anything of American origin. Although he, the young seedling, tries to work with the masterly made American tools and implements, his fingers being all thumbs, he fails to achieve anything satisfactory, and forthwith blames the tools, instead of blaming himself. Not succeeding by decent work to restore the teeth, he smears putty, tons of cement putty in them,

and thus reduces the confidence of the people regarding the permanence of dental work to zero. Prices go down, and a race for cheap work, instead of being one for good work, follows as the natural result.

Besides this, American dentistry is beginning to be outlawed in Germany. First they forbade the title, "*Amerikanischer Zahnarzt*," this demand being yielded to, we universally adopted the title "American Dentist," then followed a fight to rob us of this title, next came the robbery of the Doctor-title, and thus we are gradually driven to the position in which the German graduated dentists wish us to be: of calling ourselves without prefix or title whatever, simply "*Amerikanischer Zahnarbeiter*," i. e., American Tooth-Workman. Thus you will observe that the nickname "Tooth-Carpenter," is gradually becoming a lawful title in Germany. Efforts are being made to petition the *Reichstag* to establish an equitable law and standard, whereby graduates of the schools of this and other countries should be governed and regulated. In the meantime, wishing the REVIEW unlimited success, I remain,

Yours, very truly,

February 15, 1887.

AMERICAN DENTIST.\*

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## REVIEWS AND ABSTRACTS.

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THE MICROSCOPIC STRUCTURE OF A HUMAN TOOTH, together with some unusual and irregular forms of teeth. By C. H. STOWELL, M.D., F.R.M.S., Professor of Histology and Microscopy in the University of Michigan. Author of Students' Manual of Histology, Microscopical Diagnosis; Late Editor of the Microscope, etc.

This work contains twelve plates and twenty-eight pages of printed text; the former are printed on heavy card-board, the latter on heavy book paper, of quarto size. It is sold only by subscription, at \$6.00. C. W. Arnold, of Detroit, Mich., is general agent for the United States, and applications for agencies should be addressed to him. The work

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\*The writer is a prominent American dentist, practicing in Germany, and we suppress name and address at his request.

contains the following illustrations: Diagram of a superior molar, a "working diagram" of an incisor; cross section of upper incisor, molar, and roots of a bicuspid; blood-vessels of the pulp; section of a root parallel to the dentinal canals; diagrams of living parts of the tooth, odontoblasts, enamel rods, interglobular spaces, and lamellated dentine; also three plates illustrating seventy-five irregular and unusual forms of teeth, from the collection of Profs. Taft and Ford, of the University of Michigan.

The text serves to elucidate the diagrams, and is followed by a short history of microscopy, so far as it bears upon the structure of the teeth, and also by an elementary treatise on dental histology, with additional information on the mounting of microscopical specimens for examination.

Plates one to seven, representing the structure of the tissues composing the teeth, though in no respect unusual, are well executed and anatomically correct; plates eight and nine, representing odontoblasts, interglobular spaces, lamellated dentine, etc., are very fine engravings, and represent the careful histological work and study of the author. The remaining three plates, representing numerous malformations, are interesting from the fact that they represent, in the main, very rare specimens.

It evidently was the aim of the author to instruct and interest the dentist's intelligent class of patients, and in this respect the work can not fall short of being beneficial if placed on the table in the reception-room of the dentist.

PAMPHLETS RECEIVED.

Second Annual Report Minnesota State Board of Dental Examiners. J. H. Martindale, Sec'y.

A chart arranged for the purposes of conducting examinations of the teeth of school children. Louis Ottogy, D.D.S., Chicago, Illinois.

Das Füllen der Zähne mit Gold, etc., nach deutscher Methode, Wilhelm Herbst, Dentist in Bremen. Berlin: C. Ash & Sons.

Geo. Poulson's Quarterly Report of Inventions, etc., relating to operative and mechanical dentistry. Hamburg, Jan., 1887.

Anales de la Sociedad Odontologica, de la Habana, January, 1887.

Proceedings of the American Association for the Advancement of Science, thirty-fifth meeting, held at Buffalo, N. Y., August, 1886. Salem, Mass.: Published by the Permanent Secretary, F. W. Putnam, 1887.

Loculosis Alveolaris, or Pocket Disease of the Alveolus. By J. N. Farrar, M.D., D.D.S., New York city. Reprinted from the *Ind. Pract.*, Sept., 1886.

Cocoa and Chocolate. A short history of their production and use. W. Baker & Co., Dorchester, Mass., 1886.

Electrolysis in Gynecology, with a report of three cases of fibroid tumor successfully treated by the method. Franklin H. Martin, M.D., Chicago, Ill.

List of papers to be read before the Minneapolis Dental Society, 1886-7. Thos. Gardiner, publisher, Minneapolis, Minn.

## DENTAL COLLEGE COMMENCEMENTS.

### BALTIMORE COLLEGE OF DENTAL SURGERY.

The Forty-seventh Annual Commencement exercises of the Baltimore College of Dental Surgery, were held at the Academy of Music, in Baltimore, Md., on Thursday evening, March 10th, 1887. The annual oration was delivered by Dr. S. B. Bartholomew, and the class valedictory by Francis M. Kennedy. The number of matriculates during the past session was one hundred and twenty-three. The Degree of Doctor of Dental Surgery was conferred on the following (47) persons:

A. F. Ambrose, Pennsylvania.  
S. Ashbrook, Pennsylvania.  
A. E. Barolet, Connecticut.  
J. H. Bitzer, Virginia.  
B. Brodnax, Tennessee.  
S. L. Butler, Virginia.  
G. W. Conner, Kentucky.  
E. H. Coolbaugh, Pennsylvania.  
J. P. Canfield, Maryland.  
J. W. Cowan, Canada.  
E. E. Cruzen, Maryland.  
B. W. Cubbedge, Georgia.  
D. H. Day, Minnesota.  
J. S. B. Egan, New York.  
H. Floris, Germany.  
G. E. Furbay, Ohio.  
J. E. Getty, Maryland.  
B. H. Hawley, Maine.  
H. E. F. Heath, District Columbia.  
H. Heims, Massachusetts.  
J. N. Hester, North Carolina.  
D. M. Hitch, Delaware.  
F. M. Kennedy, Massachusetts.  
H. Koenaart, Belgium.

A. F. Lantz, New York.  
G. W. McDonald, Nova Scotia.  
M. M. Mixon, Georgia.  
E. W. Moyer, Pennsylvania.  
A. L. Munroe, Florida.  
W. A. Neece, Illinois.  
F. R. Parramore, Georgia.  
F. M. Poffenberger, Pennsylvania.  
J. B. Powers, New Hampshire.  
S. Pugsley, New Brunswick.  
J. Roach, Georgia.  
R. Roach, Georgia.  
J. J. Sarrazin, Louisiana.  
C. E. Shine, Florida.  
T. Standiford, Pennsylvania.  
J. B. L. Swentzel, New York.  
W. S. Twilley, Maryland.  
G. A. Urling, Pennsylvania.  
H. Urling, Pennsylvania.  
S. B. Ward, Virginia.  
G. L. Webb, New York.  
J. Wise, Pennsylvania.  
J. E. Wyche, North Carolina.



## DENTAL DEPARTMENT, UNIVERSITY OF MARYLAND.

The fifth annual commencement exercises were held at the Academy of Music, Baltimore, Md., on Wednesday evening, March 16th, 1887. The address to the graduates was delivered by Rev. Dr. A. C. Dixon. The number of matriculates during the session of 1886-7, was one hundred and twenty-four. The Degree of Doctor of Dental Surgery was conferred by the Hon. Severn Teackle Wallis, LL.D., Provost of the University, on the following named (51) persons:

Julius Albrecht, Germany.  
Joseph Maben Baker, Arkansas.  
Alonzo Amasa Bemise, Massachusetts.  
Daniel B. Blauvelt, New York.  
Garabed Boyajian Asiatic Turkey.  
Charles J. Brawne, Georgia.  
Henry E. Chase, Massachusetts.  
John G. Chisholm, Alabama.  
Fred Julian Crowell, New Hampshire.  
Henry E. Douglas, New York.  
John Tripner Eiker, D. C.  
George McClenahan Faulkner, Penn.  
W. Crawford Young Ferguson, Can.  
Christian G. Frantz, Pennsylvania.  
Joel Nelson Furman, New York.  
Heinrich Garbrecht, Germany.  
William F. Gray, Virginia.  
L. Lea Harban, Maryland.  
Edwin L. Harris, Massachusetts.  
Anton Joseph Hecker, Germany.  
Samuel W. Hoopes, Maryland.  
Hamilton V. Horton, North Carolina.  
Michael Hourihane, Virginia.  
Max Jaenicke, Germany.  
Paul Jaenicke, Germany.  
James Leitch Kean, Virginia.

Charles T. Loving, Texas.  
William M. Meador, M.D., S. C.  
Samuel McColl, Canada.  
James H. A. Miller, West Virginia.  
Wellington C. Miller, Pennsylvania.  
Woodson N. Murphy, Texas.  
John H. Neill, New York.  
Alberto Lopez de Oliveira, Brazil.  
Harry Homer Phillips, Pennsylvania.  
Preston A. Rambo, Georgia.  
Samuel S. Reamer, Virginia.  
Walter Franklin Richards, Illinois.  
Wilfred A. Robertson, Canada.  
Cary Clifton Sapp, North Carolina.  
Edward H. Shields, Ohio.  
Henry Rutgers Shine, Florida.  
Richard Alexander Shine, Jr., Florida.  
E. Everett P. Sleepy, Pennsylvania.  
Parke P. Starke, Virginia.  
Robert W. Talbott, District of Columbia.  
Mathew W. White, South Carolina.  
Arnold Wietfeldt, Germany.  
Heinrich Theodor Wilhelm, Germany.  
John H. Wilson, New York.  
William W. Wogan, Pennsylvania.

## DENTAL DEPARTMENT. MINNESOTA HOSPITAL MEDICAL COLLEGE.

The fifth annual commencement exercises were held in connection with the medical department, at Hennepin Avenue M. E. Church, Minneapolis, Minn., on Friday evening, March 11, 1887. The address to the graduates was delivered by Prof. John E. Bradley, and the valedictory by James E. Cummings, D.D.S. The number of matriculates during the session was nineteen. The Degree of Doctor of Dental Surgery was conferred by C. H. Hunter, A. M., M.D., President of the Faculty, on the following named (4) persons:

Cummings, James E., New York.  
Ober, Horace B., Connecticut.

Rounce, Thomas F., Wisconsin.  
Strachauer, Clarence, Minnesota.

## HOWARD UNIVERSITY.—DENTAL DEPARTMENT.

The annual commencement exercises of Howard University, were held at the Congregational Church at Washington, D. C., on Wednesday evening, March 9, 1887. The address to the graduates was delivered by Prof. Thomas B. Hood, M.D., and the valedictory address on part of the dental graduates by Murdoch C. Smith, D.D.S. The Degree of Doctor of Dental Surgery was conferred by W. W. Patton, D.D., LL.D., President of the University, on the following named (6) persons:

Barrington, Charles V., Illinois.  
Darling, Benjamin F., M.D., Iowa.  
Johnston, Jefferson H., Ohio.

Lee, T. Ellsworth, New York.  
Reinhard, Franz M. A., Germany.  
Smith, Murdoch C., Massachusetts.

## MISSOURI DENTAL COLLEGE.

The twenty-first annual commencement exercises of the Missouri Dental College were held at Memorial Hall, St. Louis, Mo., on Thursday evening, March 3d, 1887. The number of matriculates during the past session was thirty. The degree of Doctor of Dental Surgery was conferred on the following named (7) persons:

Cline H. Bartlett, Missouri.  
Howard M. Combs, California.  
Edward G. Ellis, Missouri.  
James S. Meng, Missouri.

Albert E. Nichols, California.  
Maurice W. Pearson, Missouri.  
Sidney J. Smith, Missouri.

## ROYAL COLLEGE OF DENTAL SURGEONS, OF TORONTO, ONTARIO, CANADA.

The Board of Examiners of the Royal College of Dental Surgeons have been holding their annual examinations during March, 1887, all the members being present, namely, Drs. Chittenden, Hamilton; Wood and Rowe, Cobourg; Fisher, Warton; Martin, Ottawa; Nelles, London, and J. B. Willmott, Toronto.

Eighteen candidates presented themselves for the primary examination, all of whom passed as follows:

G. H. Cooke, Eden Mills.  
D. Clark, Guelph.  
J. A. Shannon, Georgetown.  
W. E. Willmott, Toronto.  
C. E. Dean, Port Hope.  
R. A. Marr, St. Thomas.  
R. McKnight, Alliston.  
C. A. Risk, Wardsville.  
F. J. Capon, Toronto.

E. Cunningham, Ottawa.  
J. A. Robertson, Ottawa.  
W. J. Trotter, Galt.  
B. B. Morris, Brussels.  
J. W. B. Topp, Toronto.  
J. Mills, Toronto.  
R. T. Winn, Waterloo.  
R. H. Winn, Nassagaweya.  
G. McDonald, Arnprior.

Twenty students came up for the final examination, of whom the following fifteen passed successfully, obtaining the title of Licentiate of Dental Surgery:

J. G. Roberts, Brampton.  
G. A. Swann, D.D.S., Toronto.  
A. A. Martin, Aylmer.  
S. W. Coyne, Wardsville.  
J. L. Henry, D.D.S., Oshawa.  
Alex. Stackhouse, Prince Albert, N.W.T.  
C. H. Zeigler, Parkhill.  
D. Baird, Port Perry.

H. L. Billings, Toronto.  
J. J. Foster, Berlin.  
S. McPhee, Toronto.  
W. H. McDonald, Brussels.  
M. McKay, B.A., Pembroke.  
W. A. Piper, London.  
A. H. Allen, Mount Forest.

Honors—G. A. Swann, Toronto, Faculty gold medallist and College silver medallist; J. G. Roberts, Brampton, College gold medallist; C. H. Zeigler, Parkhill.

## CHICAGO COLLEGE OF DENTAL SURGERY.

The fifth annual commencement exercises were held at the Grand Opera House, Chicago, on Monday, March 28th, 1887, at 2:30 P. M. The number of matriculates during the past session was one hundred and thirteen. The Faculty address was delivered by Prof. A. W. Harlan, M.D., D.D.S.; the Valedictory address by James R. Pagin, D.D.S. The degree of Doctor of Dental Surgery was conferred by Dr. James A. Swasey, President of the Board of Directors, on the following named (37) persons:

Dewitt Clinton Bacon, Illinois.  
Henry Cliff Ballard, Minnesota.  
Charles Edwin Bentley, Wisconsin.  
Thomas Albert Broadbent, B.S., Illinois.  
Charles Dibble Calkins, M.D., Illinois.  
Charles Wilkins Coltrin, Illinois.  
Walter Scott Conn, Illinois.

William Henry Damon, Illinois.  
Ernest Edward Davis, Michigan.  
Charles Perry Deming, Wisconsin.  
Frank Armstrong Dodge, New York.  
Joseph Henry Goodearle, Wisconsin.  
Edmund Jerome Hart, Wisconsin.  
George William Haskins, Illinois.

Luther David Henderson, Wisconsin.  
 James Eucharius Keefe, Illinois.  
 John Liggett, Illinois.  
 Elgion Mawhinney, Dakota Territory.  
 William Evans Morris, Illinois.  
 Arthur Nelson, Missouri.  
 M. Eugene Norton, Illinois.  
 Henry O'Brien, Illinois.  
 James Richard Pugin, Indiana.  
 Harry Norris Pitt, Illinois.  
 John Henry Reed, Wisconsin.  
 Charles Christian Rosenkranz, Illinois.

Otto Eberhardt Seeglitz, Illinois.  
 Frank Garner Stover, Illinois.  
 Chester James Underwood, Illinois.  
 Harry Elmer Wade, Illinois.  
 Henry Palmer Wadsworth, Illinois.  
 Julius Albert Waschkuhn, Illinois.  
 Frank Charles Wermuth, Wisconsin.  
 George Nelson West, Illinois.  
 Harry H. Wilson, Illinois.  
 William Witt, Illinois.  
 Frank H. Zinn, Wisconsin.

### THE NORTHWESTERN COLLEGE OF DENTAL SURGERY

Held its second annual commencement exercises at Kinsley's parlors, on Thursday evening, March 31, and conferred the Degree of Doctor of Dental Surgery on Benjamin J. Roberts, of Illinois. Certificates of honor for excellence in deportment and high standing in examinations were awarded to E. W. Persons, of Palatine, Ill.; Frederick Curling, of Champaign, Ill.; and B. J. Cigrand and P. J. Cigrand, of Fredonia, Wis. The number of matriculates during the session was twenty-seven.

### AMERICAN COLLEGE OF DENTAL SURGERY.

The commencement exercises of this institution were held in college building, 417 W. Madison street, Chicago, Ill., on Monday, April 4. The honorary degree of D.D.S. was conferred on Thomas Rix and J. G. MacIntosh, M.D., and the following named graduates received the degree of Doctor of Dental Surgery: Edwin William Hunt, Leon T. Hale and Otto E. Fischer.

### KANSAS CITY DENTAL COLLEGE.

The sixth annual commencement of the Kansas City Dental College was held in Music Hall, Kansas City, on Tuesday evening, March 15, 1887.

The degree of Doctor of Dental Surgery was conferred on the following named.

G. W. Earl, Washington Territory.  
 James M. Gross, Missouri.  
 J. W. Heckler, Ohio.  
 Robert Lawrence, Indiana.

W. A. McCarter, Indiana.  
 J. H. Parsons, Indiana.  
 L. S. Noble, Pennsylvania.  
 Frank Strickland, Ohio.

### HONORARY.

H. W. Howe, Lawrence, Kansas.

From a newspaper clipping sent us by a correspondent in New York, we learn that there are twenty dentists in the metropolis whose annual incomes are \$20,000 or more. It is estimated that at least twenty more come between \$15,000 and \$20,000, and the remaining 700 or 800 gain from \$3,000 a year upwards. In Chicago there are about 250 dentists, and we should think from what we see and hear that not more than a dozen earn more than \$12,000, and of this number three or four may go as high as \$18,000. Fifty of the remainder have incomes of \$8,000 to \$12,000, and another fifty from \$5,000 to \$8,000. From \$5,000 down to \$1,000 per annum will about express the figures for the odd 100 or more. This estimate does not take into account the establishments of advertising dentists, where many persons are employed in the manufacture of cheap plates, and the insertion of vast amounts of plastics.

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TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—In the February number of the DENTAL REVIEW, I notice a query by J. L. Texas.

You must have the cavity of proper shape to retain the gold, above the gold and tin.

If, after you have thoroughly packed the tin and gold combined, you will take small pieces of gold "annealed very slightly," and a thin sharply serrated plugger, and wedge the gold between the wall of the cavity and the tin plug, on either side of the cavity, and then bridge over with larger pieces of gold, I think you will have no trouble. There is no cohesion between the gold and gold and tin.

B. D. W.

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TO THE EDITOR OF THE DENTAL REVIEW :

*Dear Sir* :—I have had considerable trouble in keeping cavities dry, that are situated under the gingival margin. Are there any clamps that can be relied upon to effect this object? Or, is there any other simple contrivance for such cases.

Respectfully, E.

---

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—What works on dentistry are most useful to a beginner, who is engaged in another occupation at present, but who expects to attend a dental college next winter? I now have works on anatomy, physiology, and chemistry. F.

[We think the last edition of Harris' Principles and Practice and The American System of Dentistry would be about as profitable to a student as any others at this time.—ED.]

---

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—I see so much in the dental journals in regard to the treatment of children's teeth, and that some practitioners advise leaving the roots untitled (in cases where the pulp is dead), and either leaving an opening through the tooth or the gum, where the matter "may discharge." Do you consider it correct practice under any circumstances to permit a deciduous tooth, which is not in a healthy condition, to remain in the mouth?

C. B., Ohio.

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TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—I have a great deal of difficulty in treating diseases of the pulp, and, in fact, any lesions about the oral cavity, in pregnant women. I find that many most reliable remedies which usually relieve pain, when used on women in such circumstances act as irritants, and often the pain is more severe than before applying the remedy. Can any reader of the REVIEW shed light on this subject?

Yours truly, SUBSCRIBER.

Colorado, March 5, 1887.



DR. G. W. DENNIS of LaSalle, Ill., reports a case of partial obliteration of the pulps in one lateral and two central incisors. The patient was a young lady aged twenty-one. The teeth were badly decayed, but had never given trouble. After boring into the canals about one-fourth their length, the remainder of the pulps were removed with little pain and scarcely any hemorrhage. The doctor wishes to know what caused this anomaly, and asks if it is not unusual in a person so young to find the pulp chamber filled with new dentine. Will some one answer his query ?

---

TO THE EDITOR OF THE DENTAL REVIEW :

Sir—In the February number appears a query by N. C. Franks relating to a branch of dentistry in which I have trodden nearly a lifetime, and as so many seem to be annoyed with the same difficulty, namely, dark joints and cracked blocks, I would advise him to cut out these cardinal principles and post them in his laboratory in a conspicuous place :

TO PREVENT DARK JOINTS.

1. *Never grind the joint to a dovetail, but perfectly square.*
2. *Fit the joint perfectly, and examine it when dry, not wet.*
3. *Before flasking cover the joint on the outside with a good quality of oxy-phosphate and let it set perfectly.*
4. *After flasking, cover the joints on the inside also, with a good quality of oxy-phosphate and let it set thoroughly before allowing it to become moist.*
5. *Do not use more rubber than necessary ; if you can not guess well, gauge the wax and then the rubber.*
6. *Heat the flask gradually and use steady pressure, having plenty of gateways for the surplus.*

TO PREVENT BLOCKS FROM CRACKING.

1. *Observe the above six rules.*
2. *Select the blocks so that you need not grind the inner surfaces and thus weaken them.*
3. *Have wax between block and model, so that rubber may flow between the two.*
4. *Heat up gradually, not using too much rubber and having sufficient exits ; use steady pressure while very hot.*
5. *Heat and cool the vulcanizer gradually ; let it get entirely cooled before taking the teeth from the flask.*
6. *Use common sense while filling the rubber about the blocks. Remember that the blocks are made of porcelain, and can be broken ; also, keep the plate slightly moist while filing and scraping.*

If these rules are faithfully observed you may, perhaps, break a block or make a dark joint, as I do, about once in ten years. Respectfully,

MECHANICAL DENTIST.

## MEMORANDA.

The new dental college in Buffalo died a'bornin'.

Dr. L. J. Mitchell of Delaware Ohio, will sail for Europe, May 14.

The Texas Dental Association will meet in Waco, Tuesday, May 3d.

Dr. W. B. Knapp, of Fort Wayne, Ind., paid a flying visit to Chicago last week.

A dental society has been formed in Cleveland, Ohio. At present there are fifteen members.

Dr. Thomas Fillebrown of Boston, is engaged in preparing a new work on Operative Dentistry.

Drs. H. Judd, C. A. Kitchen and R. N. Laurence, were in Chicago during commencement week.

According to the investigations of Dr. Ferrier, of Paris, France, chloride of caffeine is as potent an anæsthetic as the chloride of cocaine.

Dr. B. F. Luckey, of Paterson, N. J., is the new chairman of the executive committee of the Central Dental Association of Northern New Jersey.

Dr. J. A. Robinson, of Jackson, Mich., was elected President of the Michigan State Dental Association, at the last meeting in Ann Arbor, March 22 and 25, 1887.

A competent anesthetist is needed in Chicago, where the better class of dentists might send patients for the extraction of teeth. He should employ an expert to do the extracting.

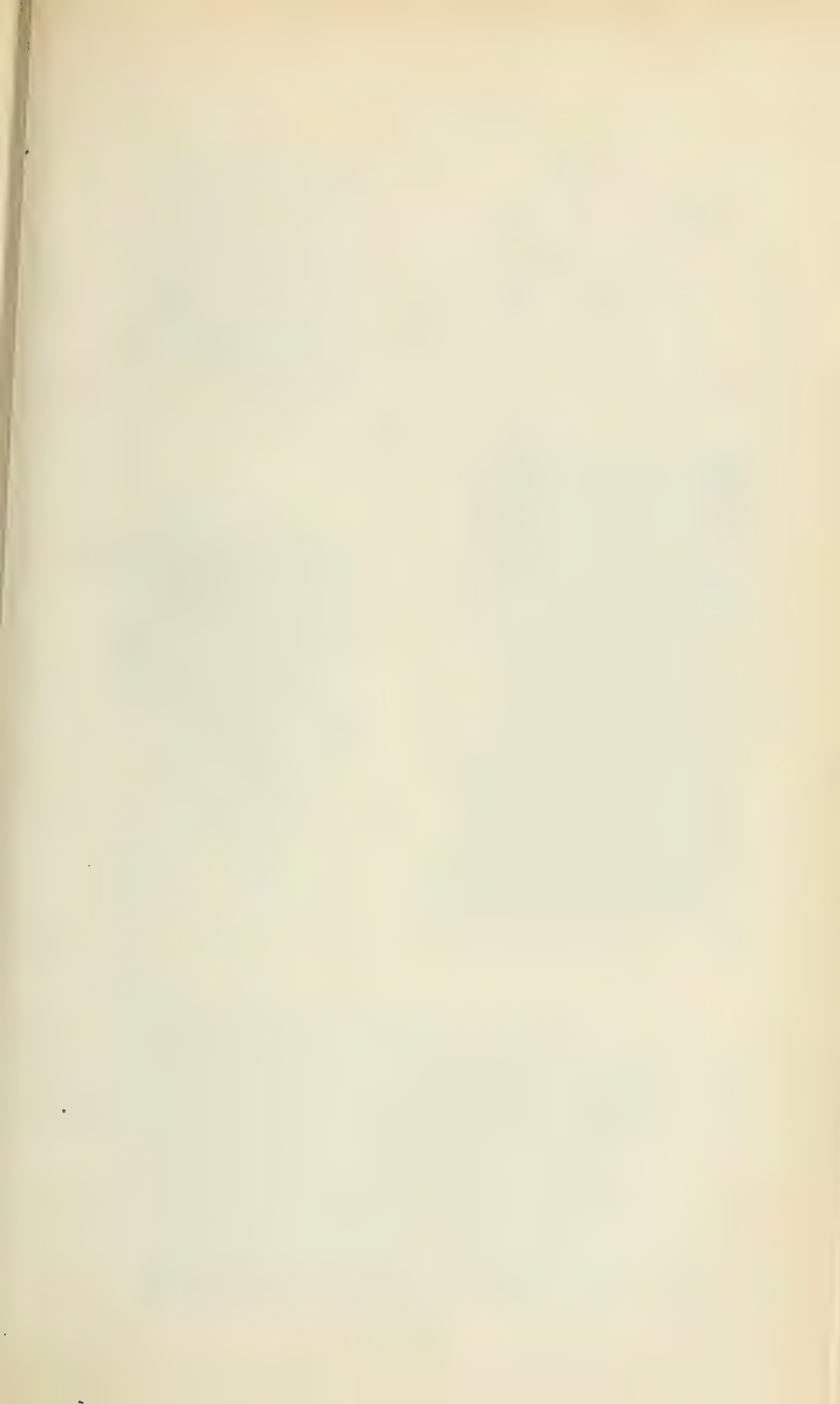
The Supreme Chapter of Delta Sigma Delta met in Chicago, March 28, 29 and 30, for the transaction of general and miscellaneous business. The organization is in a flourishing condition.

Kansas State Dental Association.—The regular annual meeting will be held at Topeka, Kansas, commencing Tuesday, April 26th, and continuing four days. C. B. Gunn, of Leavenworth, Kan., is the secretary.

Swedish Dental Society. The following are the officers for 1886-7: President, Roland Martin, Stockholm; Secretary, A. L. Lamm, Stockholm; Treasurer, G. Larsson, Stockholm, and Librarian, E. G. C. Sjöberg, Stockholm.

"The management of pulpless teeth," issued by the Odontological Society of Chicago, has been sent to many western dentists. An edition of three thousand was published, and any one wishing a copy can have it mailed *free*, by notifying Dr. J. W. Wassall, 208 Dearborn ave., Chicago.

A bill to regulate the practice of dentistry in the State of Colorado has been introduced in the legislature. The organization of a State Dental Society is also contemplated. Colorado has suffered much of late by the influx of dentists, who could not qualify to practice in the adjoining State and other eastern States.



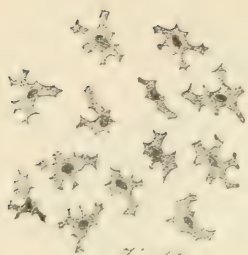


Fig. 54

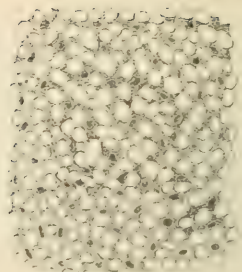


Fig. 55



Fig. 57

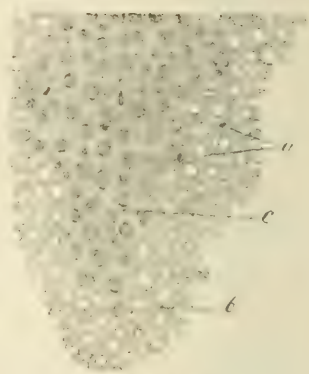


Fig. 56

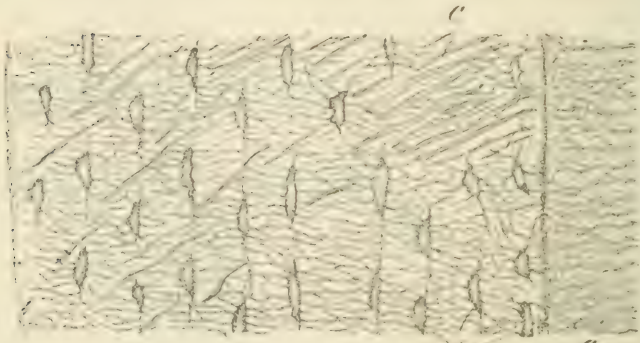


Fig. 58



DESCRIPTION OF ILLUSTRATIONS.

Fig. 54, 12th in. Obj. Cementoblasts isolated to show the peculiar irregular forms of these cells.

Fig. 55, 12th in. Obj. Cementoblasts *in situ*, with cross sections of the principal fibers of the peridental membrane of the pig, from a section cut horizontal to the surface of the cementum and including these cells. It will be seen that the cementoblasts fill all the space not occupied by the principal fibers. (In figure 57 *c*, the cementoblasts are seen as they appear in section perpendicular to the surface of the cementum.)

Fig. 56, 12th in. Obj. Section of cementum of pig cut horizontal to and near the surface, showing cross sections of the included fibers. *b*, Thin margin of section, from which the fibers have fallen out of their alveoli. *c*, A little thicker portion in which the fibers remain. It will be noticed that from shrinkage the fiber is a little small for its alveolus, so that it is slightly separated from one side. *a*, Cement corpuscles.

Fig. 57, 1-8 in. Obj. Perpendicular section of the cementum of pig, showing the included fiber of the peridental membrane. *c*, Margin of cementum showing fibers passing from the cementum to the peridental membrane, and the layer of cementoblasts with other cells in the neighborhood. *f*, Lymphatics. *d, d*, Fibers protruding from broken margin of section. *a*, Dentine. *b*, Junction of dentine and cementum.

Fig. 58, 12th in. Obj. Cementum of pig from the dried section. *a*, Dentine. *b*, Lacunæ of cementum with canals anastomosing with each other. *c*, Imperfectly calcified fibers. It will be noticed that a few of the dentinal tubes pass through into the cementum.

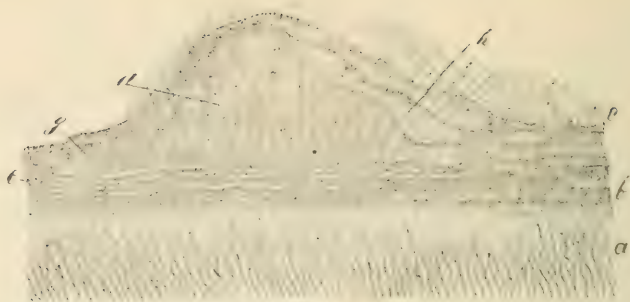


Fig. 39

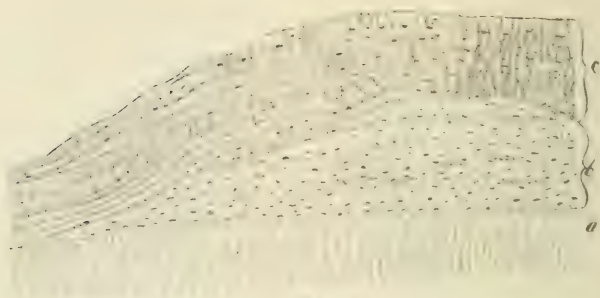


Fig. 40



Fig. 41

DESCRIPTION OF ILLUSTRATIONS.

Fig. 59, 1 in. Obj. Hypertrophy of the cementum on the side of the root of a lower molar near the neck of the tooth. From lengthwise section, man. *a*, Dentine. *b*, Cementum. *c*, Fibers of peridental membrane. From *b* to *c* the cementum is normal, and the incremental lines fairly regular, but at *d*, one of the lamellæ is greatly thickened. At *e*, this lamella is seen to be about equal in thickness with the others.

The next two lamellæ are thin over the greatest prominence, but one is much thickened at *g*, and both at *h*. These latter seem to partially fill the valleys which were occasioned by the first irregular growth.

Fig. 60, 1 in. Obj. Hypertrophy from root of cuspid, man, in which the irregularity is confined to the first lamella. *a*, Dentine. *b*, Thickened first lamella. *c*, Subsequent lamellæ, which are seen to be fairly regular.

Fig. 61, 2 in. Obj. Apex of root of an upper bicuspid tooth with irregularly developed cementum. *a*, *a*, Dentine. *b*, *b*, Pulp canals. The lamellæ of cementum are marked 1, 2, 3, etc. *d*, *d*, *d*, Absorption areas that have been refilled with cementum.

It will be seen that the apices of the roots were originally separate, but became fused with the deposit of the second lamella of cementum, and that in this the irregular growth began and was most pronounced. It has continued through the subsequent lamellæ, but in less degree. It will also be noticed that the absorption areas, *d*, *d*, *d*, have proceeded from certain lamellæ. That between the roots has broken through the first lamella and penetrated the dentine, and has been filled with the deposit of a second lamella. Other of the absorptions have proceeded from lamellæ, which can be readily made out. The small points, *e*, seem to have been filled with the deposit of the last layer of the cementum, while others have one, two or more layers covering them.





# THE DENTAL REVIEW.

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No. 7

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## ORIGINAL COMMUNICATIONS.

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### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

BY G. V. BLACK, M.D., D.D.S.,

Professor of Pathology in the Chicago College of Dental Surgery.

*(Continued from Page 302.)*

#### THE CEMENTUM AND CEMENTOBLASTS.

The cementoblasts or cement builders are to the cementum what the osteoblasts are to the bone. They are the cells concerned in the formation of the matrix, and the deposit of lime salts, which enter into the formation of the cementum. These are cells of rather large size and of peculiar form, and are found lying between the principal fibers of the peridental membrane and upon the surface of the cementum. While functionally they hold the same relation to the cementum that the osteoblasts hold to the bone, they have no resemblance to the osteoblasts in form.

The osteoblasts are polygonal cells inclining to the round form, and their longest diameter is often directed away from the bone upon which they lie, as has been said on another page. I have never seen the cementoblasts presenting these forms, but on the contrary, they are always distinctly flattened cells with one of their flat sides resting upon the cementum. They are, indeed, in the form of somewhat thickened scales, of very irregular outline. This irregularity of outline seems to be due to the position they occupy among the principal fibers of the peridental membrane as these latter pass out from the cementum.

There is usually a central mass, which is seen to contain a regularly formed nucleus, and from this central portion irregular projections extend among or between the fibers of the neighborhood.

The cells, with their projections, are so placed that they occupy all the surface of the cementum, except that occupied by the fibers that emerge from it. A better idea of their form can be gained by examination of the illustrations, figs. 54 and 55.

In the first of these I have isolated several cells, and it will be seen that the form of the projections from the cell body is such as will fit in between the fibers. In the other illustration the fibers are shown cut across and left white, so that their outline may be better seen. These illustrations are taken from sections cut horizontal to the surface of the cementum, and are double stained with hematoxylin and neutral carmine, which gives a diffusive red stain to the fibers, while the cells are of a deep blue.

Sections cut in any other direction will fail to give a correct impression of the form of these cells, but the sections cut perpendicular to the surface are valuable as illustrating fairly the thickness of the cells. In such sections the cementoblasts are seen in parts only. In a given focus of the lens, isolated parts of the same cell may appear as small cells separated by fibers, and it is practically impossible to connect them and gain definite information of their form from such sections alone. The projections among the fibers of the membrane spoken of above are not in any proper sense processes from these cells, but are to be regarded as portions of the cell body which takes this form on account of the presence of the fibers.

I have made out true processes proceeding from these cells in but few instances, but enough to show that they exist upon a considerable number, if not all, passing into the cementum upon which the cells lie. However, they are evidently not so numerous nor so regular as the processes of the osteoblasts, or if so they are much more difficult of observation. I have never seen processes extending from these cells in a direction from the cementum out into the tissue of the periodontal membrane. I think it probable that such processes exist, but it is impracticable to display them by stretching the tissue away from the cemen-

tum, attached as it is by strong fibers, in any manner similar to that represented in figs. 17 and 18 (December number), in case of the non-attached periosteum.

In the growth of the cementum some of the cementoblasts are included in its substance, which persist as cement corpuscles in the same manner as the osteoblasts are included in the bone as bone corpuscles. The number and relative position of these are, however, extremely irregular in those animals that have a thin cementum. About the necks of the human teeth and the teeth of the carnivora, there are usually no cement corpuscles, but at points where the growth of cementum is thicker, they appear in considerable numbers; and toward the apex of the root, where the deposit of cementum is considerable, they may appear in profusion. That regularity of occurrence which is noted in bone corpuscles, is not seen in the cement corpuscles. On the contrary, they appear in groups or in patches, while perhaps considerable areas are destitute of them. In some of the herbivora, and notably in the pig, they appear with more regularity, figs. 57 and 58.

The cement corpuscles have processes corresponding to those of bone corpuscles, but presenting great irregularities. Some may show none whatever, others a few that may be very short or very long. While others again have a great profusion that radiate in every direction, branch and anastomose with each other and with those of neighboring cells, forming an intricate network. Many of the corpuscles show processes passing in one direction only and that is usually toward the surface of the cementum.

The *cementum* is deposited upon the dentine and covers the root portion of the tooth. There is never an attachment of the soft tissues with the dentine upon its outer portion. Under some conditions the soft tissues may, indeed, lie in apposition with the dentine upon this surface, but there is no physiological union of the two structures. The physiological connection of the dentine is with the dental pulp, and upon the pulpal side of the structure. When the soft tissues lie in contact with the opposite side, whether during development or afterward, the physiological process is either the deposit of cementum upon the dentine, or absorption of the dentine.

The deposit of cementum is in the form of lamellæ, layers, or strata, that covers the root over its entire surface. These lamel-

læ are thin, normally, toward the neck of the tooth, and thicker, progressively, as the apex of the root is approached, the difference usually being very considerable. In normal conditions the number of lamellæ is about the same on all parts of the root, which gives a much thicker cementum at the apex than at the cervical portion of the root. The first of these, or at least the first part of the first lamellæ, is usually hyaline or irregularly granular and ordinarily contains no cement corpuscles, or at least but few. The next lamella, especially high on the root portion, presents these corpuscles very generally, and they continue irregularly through the successive lamellæ, provided always that the individual lamellæ be of considerable thickness. Very thin lamellæ, whatever their position, are usually destitute of corpuscles, while the thicker ones contain them.

These lamellæ seem to represent periods of activity in the deposit of cementum, each lamella being the result of a single period of activity. If we extract a tooth soon after its eruption and examine its cementum, we will usually find it very thin and containing but one or two lamellæ. A tooth from a person who has reached maturity will present a larger number and the cement will be thicker than in that of a child of twelve or fourteen years, but not nearly so thick as the cementum upon the roots of teeth from old people; nor will it contain so many lamellæ of cementum. These layers are subject to the greatest irregularity, both in the thickness of the single ones and in their number. Neither do they present much regularity at a given age in different persons. In all these respects there is the utmost irregularity. The individual lamellæ of cementum are divided by lines that may be very distinct, or but imperfectly seen. The mode of preparation makes much difference in the distinctness of these lines. Sections cut from decalcified teeth and mounted plain, (without staining) in glycerine, show them very fairly, but they are rendered more distinct by tinting slightly with a diffusive carmine stain. These lines I shall call, as Salter has done with good reason, the *incremental lines* of the cementum. This is appropriate from the fact that each one marks the divisions between the lamellæ that are laid upon the root, the one upon the other. Each successive lamellæ is younger than the preceding one, as we pass from the surface of the dentine outward.



In subperiosteal growth of bone, incremental lines occur similar to those in cementum, but they are rarely permanent, for, as has been said, subperiosteal bone is changed by the burrowing out of the bone first formed, and the deposit of Haversian systems in its stead. Nothing of this kind occurs in the cementum. It has no Haversian systems. In all of my examinations of this structure, I have not in any instance seen anything that could be called a Haversian system as these are known in bone. I have seen many canals that seem to represent small bloodvessels included in its structure, especially near the apex of the roots or between roots that have become fused by deposits of cementum, but these have never had about them deposits resembling the Haversian systems of bone. In normal conditions the lamellæ of cementum, when once deposited, are permanent. They may indeed be removed, or burrowed into, as I shall describe later, by absorptions beginning at the surface and cutting through the successive layers, but they bear no resemblance to the burrowing for the formation of Haversian canals in bone. Such absorptions are always refilled by a true surface deposit of cementum, if filled at all. See fig. 61, *a, a, a*.

A correct understanding of these facts is important to the study of hypertrophies and absorptions of the cementum, which I shall introduce later. Furthermore, the cementum must, I think, be regarded as *continuously growing*, in the sense of not ceasing at maturity. It is very evident that its growth does not cease with the maturity of the tooth, nor with the maturity of the person. We find pretty uniformly a thin cementum upon the teeth of the young, and a thick cementum upon the teeth of the old; and when a great number are examined from persons of known ages, it will be found that there is a continuous increase in thickness and in the number of incremental lines. But in such examination great variations from any given rule will be noted. One set of sections cut from the lower molar of a man, about seventy years old, shows on the sides of the roots forty-two lamellæ easily distinguishable and counted with a half inch lens. While over the apex of the root, which presents some hypertrophy, there are a few additional lamellæ.

The incremental lines are not always regular in their distribution over the tooth's root. Sometimes a lamella is laid down that

covers only a part of the root and two lines merge into one. This seems to show that there has been a local activity of deposit over part of the surface, that has not extended to the entire root. Some of the incremental lines seen toward the apex of the root where the cementum is thicker may disappear as the neck of the tooth where the cementum is thinner, is approached. Again, regions will be found in which it is evident that certain lamellæ of the cementum have been removed by absorption.

#### FIBERS OF THE CEMENTUM.

As I have said the fibers of the peridental membrane spring out of the cementum. These fibers pass through all of its lamellæ to the first one laid on the dentine and part way through that, no matter what the thickness may be. In most localities in the human cementum these fibers are not continuous, but are broken at some of the incremental lines. At some such points they have certainly been detached by absorption, but in most instances this cause of detachment can not be made out satisfactorily. On account of this frequent breaking it is not generally possible to follow individual fibers from the peridental membrane entirely through the cementum, even in sections cut parallel with them, though they may be seen in all its lamellæ. In the pig the fibers are much larger and less thickly placed than in man. This renders the tracing of individual fibers from the membrane into this substance comparatively easy, fig. 57. In the pig, also, there is a great thickness of cementum, comparatively, formed in a few months, and this presents but few incremental lines at which the fibers are broken. We can, therefore, follow individual fibers through its entire thickness in sections cut parallel with them. In man, the fibers are so much broken at the incremental lines that it is only now and then that we are able to find individual fibers traversing its whole thickness.

Much of the cementum of man, especially that about the necks of the teeth, when so stained as to show them clearly, seems almost as if made up of fibers. These are usually small, placed close together, and run pretty squarely outward, pursuing a straight course, Fig. 59. *b, c*, but farther up on the root, where the cementum is thicker, they are often found curved in various directions, and many times we will notice an abrupt change of

direction at an incremental line. Some spaces or patches will be noticed in which the fibers seem to be absent.

These fibers have been noticed by various writers, and not a few have spoken of them as the fibers of Sharpey, while others seem to have mistaken them (Salter and Abbott) for canaliculi similar to those of dentine. This error can scarcely be avoided if the examination has been confined to the dried specimen, for it seems that many of the fibers are but imperfectly calcified, and in drying suffer shrinkage to such an extent as to give that appearance. I have a number of sections in my collection that show this.

These are the principal fibers of the peridental membrane included in the cementum in its growth, and furnish the means of making firm hold of the peridental membrane upon the root of the tooth. They are white, connective tissue fibers the ends of which are included in the matrix of the cementum and for the most part calcified with it. They are, therefore, in all respects like the residual fibers of bone, and serve a similar purpose. The fibers differ from the matrix of the cementum sufficiently to make them apparent when the lime-salts are removed, but when both are calcified, they can not be demonstrated except in cases in which there is imperfect calcification of the fibers, as has been mentioned above.

A very beautiful demonstration of these fibers may be had in the cross-section of them, i. e., in moist sections of the cementum cut horizontal to its surface. If these be very thin they will show the fibers cut across especially well, if stained and mounted in balsam. In this case there will generally be such a shrinkage that a part of the circumference of the fiber will be parted from its matrix, showing it plainly; and by close focusing the whole outline of the fiber may be clearly seen. In some very thin parts of sections the fibers may drop out of their alveoli, leaving openings. This was the case in the section from which fig. 56 was made. In many very thin sections parallel with the fibers, we may see about broken edges the fibers protruding from the margin, as shown in fig. 57, *d, d*. This is much as I have illustrated the residual fibers of bone as doing in fig. 21 (December number).

The clearness and regularity of the appearance of these fibers

of the cementum in my preparations makes it a matter of great surprise to me that they have not been before described by writers on dental histology. I can only account for its oversight by the fact that very few studies of the peridental membrane have been made, and these seem to have been only casual, and thus, the connection of the fibers of the two structures have escaped notice. In this way the appearance of fibers in the cementum has been passed as something not understood, or they have been wrongly interpreted. However, most of the studies of this structure have been made from dried sections in which the fibers could not be demonstrated.

#### IRREGULARITIES IN THE GROWTH OF CEMENTUM.

Hypertrophies of the cementum have been under discussion for many years and generally they have been regarded as pathological phenomena. I think, however, that the careful student must admit that, in the vast numbers that occur, there are comparatively few instances in which the pathological character of these are fairly made out. They have been regarded as connected with all manner of aches and pains. I wish now to call attention to a mode of study of these, which, if followed, will, I think, dispel most of these notions. Not that I wish to affirm that in no case a hypertrophy of the cementum may be related to a process of disease, but rather to show that this is not necessarily the case and as a matter of fact is very rarely so. They are to be regarded rather as irregularities than as pathological phenomena.

I have already said that the cementum is to be regarded as *continuously growing* in the sense that its growth continues to old age. It may be found augmenting in thickness in persons seventy years old and the process be perfectly normal. I wish also to further emphasize the fact the manner of the growth is by interrupted accretion, or in periods of activity and rest. The intervals of activity are probably very great sometimes, but the examination of the cementum of any considerable number of persons at thirty years of age, and comparisons with a similar number at fifty years, will show that there has been a pretty regular increase in the thickness and in the number of lamellæ of the cementum. If those of fifty are again compared with those of seventy, a



farther increase in thickness and number of lamellæ will be manifest. This growth takes place at irregular intervals of time, which is expressed in this lamellation. The lamellæ are laid the one upon the other successively and the outer ones are of course the last in the order of growth.

When a tooth presents through the gum and has taken its place in the arch, its cementum will generally present but one layer; but if it has been brought into use for a time it is likely to present two or three, one formed contemporaneously with the root and one probably when it was first brought into contact with its antagonist or possibly while it was being protruded after the growth of the root was accomplished. It seems probable also from examinations I have made, that there are often several layers of cementum deposited during the movements of the teeth connected with the lengthening of the face which was illustrated in the April number, page 300. At any rate differences in this regard are observed, whatever be their cause. As the tooth grows older new lamellæ are laid down. It must be admitted that the study of these lamellæ has not as yet been sufficient for us to form any definite idea as to their relation to the age of the individual after the first two or three have been laid down. But however this may be, it will be found upon examination that every case of irregularity in growth will be connected with one or more of the lamellæ, and the relative time of the irregularity of growth to the deposit of the individual lamellæ can be made out.

On applying this mode of study to the irregularities of growth in my collection, I find a great variety. They are connected with the lamellæ in all sorts of ways. Some belong to a single lamella, others include several, while others again include all of the series from the first to the last, each one being thicker in the hypertrophied portion than elsewhere. Now it is perfectly evident that such a hypertrophy, as this latter, has been forming with each successive growth of the cementum from first to last, while those that are confined to one or a few lamellæ have begun and ceased with the deposit of these. There is no such thing as interstitial growth of the cementum, and no thickening of the lamellæ can occur after another is deposited over it.

Among those hypertrophies confined to one or a few lamellæ,

the greatest variety will be found. I have specimens from teeth just erupted showing hypertrophy of the first and only lamellæ yet deposited. But these are more rare than those connected with the second or third. It seems to be with the latter that the greater number of the irregularities are connected; though a goodly number will be found beginning with those deposited later; and some are connected with the last one, even in very old persons. These last have of course occurred late in life while the others have occurred at an earlier age. The greater number of the irregularities in the deposit of the cementum are probably connected with some especial strain upon the tooth, and their causation probably corresponds with that of the absorptions which are yet to be studied. We generally find these combined in the same tooth and occurring at about the same time. That is to say, the absorptions of the cementum are shown in the lamellæ that lie next beneath those that show the condition of hypertrophy but are generally upon another portion of the root, which may be contiguous or upon the opposite side. I frequently see these latter that have cut away the two first lamellæ, penetrated the dentine to some depth and have been refilled with cementum in connection with the deposit of the third or fourth lamella. Now these facts have prompted this thought: the tooth makes its growth and presents its crown to its antagonist. At first the cusps of the one do not strike fairly into the sulci of the other. This causes a lateral strain upon the peridental membrane as the tooth is forced to one side sufficiently for the proper adjustment of the cusps. A portion of the membrane is put upon the stretch and probably the cementoblasts are stimulated to increased deposit of cementum during this interval. This results in an irregularity of growth which may be in connection with a single general lamella of cementum, or it may be only a partial lamella confined to one part of the root. At the same time absorption may have occurred in another part as upon the opposite side, removing some portion of the layers previously formed, or forming irregular openings throughout the whole thickness of the previous formation and penetrating the substance of the dentine. These latter are now refilled with cementum with the next lamella deposited, and afterward the deposit may take place regularly over both the

hypertrophy and the absorption area, and these will be found covered with a number of regularly formed lamellæ.

Such a theory seems very weak, however, when confronted with thickenings like the one shown in fig. 60, which is confined to the first layer, while the subsequent ones are very regularly formed. This was a thickened portion on the side of a root of a cuspid tooth. It can not be stated positively that this was all formed before there was a contact with its antagonist, but its deposit was certainly continuous with the layer formed contemporaneously with the development of the tooth. I have found such thickenings of the first layer in teeth not yet fully developed upon which there was as yet but the one layer of cementum deposited. This seems to show that these irregularities do not depend wholly upon extraneous influences.

Other instances will be found in which on some part of the root there will be a thickened portion confined to a single layer belonging to a much later date, as the one illustrated in fig. 59. This was on the distal side of the root of a molar near the gingival border, and so far as could be made out without a history of the case, the conditions point to an irregular strain upon the tooth as a cause. The crown of the adjacent bicuspid had been broken away a number of years previously, apparently, and this tooth had leaned forward over the remaining root. Upon the mesial side of the anterior root there were several absorptions affecting the lamellæ next beneath the one hypertrophied upon the distal side. Appearances indicate that this occurred at an age of upwards of fifty years.

Other cases occur in which there is an increased thickness in each successive layer over the same spot. These are found mostly about the apex of the root upon one side or covering the entire apex in the form of a rounded knob. They may become thinner gradually toward the neck of the tooth or cease abruptly. In the latter case absorption areas will generally be found around the border of the hypertrophied portion. I have illustrated such a case in fig. 61, from a hypertrophy of the root of a superior bicuspid. It will be noted that in this case the roots were originally separate, and that they became fused together with the deposit of the second lamella of the cementum; and that this lamella presents the greatest thickness, while those deposited

later are progressively thinner; therefore a large part of this deposit must have occurred early in life. Connected with this, areas of absorption have occurred at *d, d, d*, which have narrowed the root at that part, increasing the knobbed appearance of the apex. It will be seen that these absorption areas have been refilled with cementum in connection with the deposit of certain lamellæ.

I have seen a number of cases of hypertrophy similar to the one last described that I supposed resulted from the loss of an antagonist and a consequent partial protrusion of the tooth from its socket. But most of these showed, when sections were made, that the thickening had begun very early in the history of the tooth. The second and third lamellæ being the thicker, necessarily excluded the loss of the antagonist as the cause. Other cases occur in which the increased growth belongs to the lamellæ last deposited, and in these the loss of the antagonist would seem to be a probable cause. Our knowledge of the subject is not yet sufficient for the satisfactory determination of the cause of these irregularities in any case, but the suppositions given may lead to further study and thought, and lead to something more satisfactory. In the meantime it seems evident that the anomaly should not be considered as a pathological state, but rather as an irregularity of development. Yet these enlargements, when considerable, may impinge upon the surrounding tissue in such manner as to induce conditions of a pathological nature.

Another point of interest should be noted in this connection. It is a well-known fact that cementum and bone never unite. At least no well authenticated case is on record. In reptiles and fishes the osseous union of the teeth with the bones is the normal condition. With this fact before us, and considering the great similarity of cementum and bone, it seems quite remarkable that such a union should not sometimes occur. In the study of this subject, I often find an exceedingly thin periodontal membrane dividing the hypertrophied cementum from its alveolus. But there is always some soft tissue. I do not remember of any case occurring high up on the root about which the membrane was unusually thick. The rule is that it is thinner than about the parts not hypertrophied. The bone forming the alveolus is also apt to be more than usually cancellated.



When cementum in its growth approaches cementum the case is entirely different. On coming together fusion occurs whether the roots belong to one tooth or to different teeth. In this way the roots of neighboring teeth become fused together in a considerable number of instances. Sometimes this seems to have occurred contemporaneously with the development of the teeth, and the subsequent thickening of the cementum obliterates the point of junction to such an extent, as to give the appearance of a single root with two crowns. But many of the cases seen have evidently occurred comparatively late in life. I have seen a number of specimens in which it seemed that the fusion of the roots had occurred on account of the teeth having been forced out of position, especially in molars, which had inclined forward after the loss of the next tooth anterior to them, and the roots pressed backward in such a way as to come in contact with the roots of a posterior tooth. Again spherules of calcific material occur in the periodental membrane. As has been noted (March number) cementum may be deposited upon these, and this will fuse with the cementum of the root of the tooth.

These facts taken together seem to show that, while cementum and bone are so very similar in structure, there is a radical difference in the specialized cells by which they are formed, which prevents them from coalescing in their functional activities. Yet these cells are developed within the meshes of the same membrane, the fibers of which span the space from the one hard formation to the other.

TO BE CONTINUED.

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## MICROSCOPY IN DENTISTRY.

By THOS. L. GILMER, M.D., D.D.S., Quincy, Ill.

Few dentists give any attention whatever to microscopy; still fewer ever attain to celebrity in this branch. This is not as it should be. The requirements essential to a high place in our specialty are those which also fit one to become successful in microscopy, viz., intelligence, mechanical ability, patience, and painstaking exactness. The aim of the writer in offering this article is, not to give instruction to those already versed in microscopy, but to stimulate, if possible, fellow-practitioners not

thus versed, to research in this most beautiful field. If one commences right—that is, at the bottom—he can not but be interested; there is so much to be seen, of which he had not dreamed, that he will find it difficult to leave his instrument, even for sleep. It is a work which may be pursued after darkness sets in quite as well as by daylight, thus not in the least interfering with regular professional duties. The progress being made in our professional literature, and the wider range of thought therein prevailing, have created an imperative demand for microscopical knowledge, in order to permit a better understanding of the various histological articles appearing in this and other journals. A few men of our specialty having outstripped the masses are offering us food, which, from lack of a certain kind of knowledge, many are unable to fully digest. The study of microscopy, in anything like completeness, must of necessity be a post-graduate course. The limited time in college, the large size of the classes and the meagre facilities for such study while attending lectures, prevent students from becoming very proficient in this branch. We frequently hear it asserted that the field of the dentist is narrow. If the reader really believes this to be true, let him take up those branches of microscopy which are included in his own specialty, and he will observe that he has before him a sea of facts, discovered and undiscovered, whose depths he may never be able to fully sound.

One of the principal essentials to histological study is the ability to differentiate readily and clearly. In general medicine faulty differentiation has crippled the use of the microscope, one of the most valuable aids to correct diagnosis. Whence comes this defective differentiation? The first cause is probably due to an improper beginning of the study. Instead of commencing at the bottom, among the microscopical flower gardens and the museums of animalculæ; the cells of the brain, of the spinal cord, the odontoblasts, the osteoblasts, and other complex tissues, are taken up. Beginning the study at this point discourages many, and on account of it, microscopic research is often abandoned and the instruments only used as ornaments for the purpose of giving a more scientific air to the office. Other causes may be found in careless and faulty manipulation. First, aim to be a microscopist, then after becoming one, aim to be an histologist. The

latter should no more precede the former than the study of surgery should precede that of anatomy.

A fine instrument is a great desideratum in the study of the higher branches of microscopy, but it is not an essential. A good, steady stand, with an inch and a fifth-inch objectives, two eye pieces, A and C, a live box, a few glass slides, a few cover glasses, a small pair of pliers and a pipette will suffice for some time. These may be bought for from forty to sixty dollars, the cost depending on quality of lenses. The beginner should steer clear of the higher powers; they tend to confuse. All the amplification necessary is that which gives a true idea of what is to be seen; beyond this, confusion and perhaps wrong conclusions result. With the more powerful lenses the field is much diminished, and the relation of one part of the object under observation to another is not so easily or certainly distinguished. The experience of others, as well as my own, would indicate the simpler forms of animal and vegetable life found in water as the best starting point for the beginner. This study is intensely interesting, and at the same time instructive. Here is found the veritable protoplasm, the idea of which is vague to those who have never seen it. It may be in the form of the *amœba*, which seemingly is without organization, no head, no brain, no limb. Still it pouches out parts of its body and forms pseudopodia, by means of which it travels from place to place, or folding its body over particles, turns itself into a stomach, and, digesting parts of them, forces the indigestible portions out through the surface of its body. Upon viewing such things the question naturally arises, what is life, and where does reason commence. The *rotifer vulgaris*, with its jaws seemingly in its stomach, grinding away, while the beautiful wheels on either side of the head revolve at a rapid rate, making a vortex in the water which causes all the little particles and smaller animalculæ to rush headlong into its mouth, with many other just as wonderful things, may be seen in a drop of water taken from a leaf, stick, or blade of grass, which has fallen in the pond, bog or brook. In such places lives the *amœba*, the *rotifer vulgaris*, the *vorticellas*, that wonderful flower-shaped animal the *volvox globator*, the beautiful algæ, the most remarkable species of which are the geometrical des-

mids and diatoms, with a multitude of other microscopical animals and plants no less interesting. After becoming acquainted with the lower forms of vegetable and animal life, the study of histology may be undertaken in earnest. I know of no better instruction for the beginner than that contained in Schafer's "Essentials of Histology." It has good cuts and is practical, while the text is not overburdened with superfluous material. Following this, the special work bearing on dentistry may be taken up. Sections of the hard portions of the teeth and of the pulp, both normal and pathological, should be made and studied. For the preparation of the former, abundant instruction is given in the books. In the study of the latter, injected specimens give the best results. The injection of pulps by the ordinary methods is not easily accomplished. Even though it were, the natural injection is greatly to be preferred. This method "captures the conditions," a great desideratum in hyperæmic or other pathological states. By dropping the tooth immediately after extraction in Muller's fluid, the ends of the vessels are sealed, the red blood corpuscles preserved and held in place, while the pulp is hardened *in situ*. When sections are made it will be observed in hyperæmic pulps that the vessels are often extended by the corpuscles to a point approaching bursting, while in others, or in other fields of the same section it will also be seen that extravasation has taken place.\* One may form an idea of histological specimens from cuts, but the man does not live who can portray on paper, and through this means only, convey such a living idea of the odontoblast cells, with their dental fibrils and other cells and constituents of the tooth's pulp, as that produced by first making a section and then viewing it with one's own eyes. The microscope has revealed much to the dentist regarding the teeth and their development. It has much more to disclose. It is telling us much regarding the diseases of the teeth and the environing tissue. It has recently shown us the origin of one of the acids which is found in the mouth. We are just entering a field in which there is much work to be done, and truly the laborers are few. Large opportunities await those who have the ability and the will to work with hand and brain. It is certainly desir-

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\*For directions in treatment of pulps after hardening, see Dr. Black's article in "American System of Dentistry," Vol. I, page 841.



able that the dentist have a clear conception, from his own observation under the microscope, of the minute form elements of the tissue upon which he is daily operating. The satisfaction of being in possession of this knowledge will fully repay the time and labor given in this direction. If you are giving time to the criticism of brother practitioners, to speaking of the wonderful operations you are performing, to wire-pulling and politics, drop these, and give the time thus spent to the microscope. It will rest you when weary from too much labor—it will cultivate your mind and give it more breadth.

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### THE LIMITATIONS OF THE PRACTICE OF DENTAL MEDICINE AND SURGERY.

Doctorate address to the graduating class of the Chicago College of Dental Surgery, March 28, 1887.

By A. W. HARLAN, M. D., D.D.S.\*

Prof. Materia Medica and Therapeutics.

*Mr. President, ladies and gentlemen and graduates :*

Time-honored custom has decreed that one of the faculty or its representative should deliver to the graduates an address at the expiration of the college year. In obedience to your desire for further illumination I cheerfully perform this last sad duty before the final fall of the curtain. No fixed rules have been laid down to guide the speaker in choosing a subject, nor have I been able, after much searching of dusty parchment, to find an authoritative by-law stating whether the address should be humorous, learned, witty or solemn. This much, however, has been discovered, that it is the last occasion on which a speaker can felicitate the class, officially, on its escape from the terrors of the green-room, and this I do with great pleasure. On this point it is certain that we are in unison. To have studied faithfully during the prescribed time, and honestly earned your titles as doctors of dental surgery, is creditable to your intelligence, and the reward of your industry, and it is a source of much satisfaction to the faculty and every instructor connected with the college. To-day

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\*CHICAGO, March 28, 1887.

PROF. A. W. HARLAN:

*Dear Sir :*—The graduating class of 1887 respectfully request that the address delivered by you, at the fifth annual commencement exercises, be published in the DENTAL REVIEW.

E. MAWHINNEY, President,  
GEO. N. WEST, Sec'y.

we welcome you into the ranks as brothers, friends and associates. The responsibilities of your vocation come with the honors gained, and for a full realization of their gravity, we trust you are sufficiently conscious to bear them with credit to alma mater. I have no desire to moralize to you on the method of conducting a practice, the riding of hobbies, advising you about the choice of a wife, a religion, or the manner of selecting a name for the first baby, but I wish to invite your attention to a consideration of "The limitations of the practice of dental medicine and surgery."

Many persons outside of the profession as well as some physicians and dentists, believe that dentistry is a mere mechanical trade, easily learned, and that its pursuit, as a business, may be considered to occupy the same relation to the general practice of medicine as does that of the manufacture of wooden legs, glass eyes, or of apparatus for correcting physical deformity. Nothing could be farther from the truth than this, as dentists not only supply, by substitution, organs lost by disease or accident, but at all times they are operating on living tissues, as surgeons, or treating diseases, as physicians, generally limiting their practice, however, to the region which is still to be defined. Manipulative dexterity, mechanical skill and ingenuity does not constitute the successful dentist, any more than the most skillful draughtsman by that accomplishment alone becomes the finished artist.

In both cases something more is required. Much has been written, in recent years, on the relation of dentistry to medicine, mostly, however, by dentists. I thought it might be of interest to you, and the public here assembled to sketch briefly the limitations of practice as we find it, not as our fancy might picture it. We need not search the records of the past to give emphasis to our present position, but take the actualities of daily routine observable anywhere.

Valuable space in dental periodicals has been used by eminent gentlemen to prove that dentistry is a specialty of medicine—to prove that it is not a specialty of medicine—and much time has been wasted in conventions by speakers arguing for and against the question. The subject is still under discussion and apparently no nearer settlement than it was fifty years ago. There are few or no countries where dentistry is practiced by medical men exclusively. This can be said of no other specialty in medicine.

The special education of a dentist is not completed in any medical school or university in the world which is covered by the medical license, excepting Hungary and Sweden, and in those countries the final examinations are held in the dental branches by practical dentists, and the certificates issued are valueless so far as the general practice of medicine is concerned, by not being broad enough to cover it, or being obligatory on the candidates. Wherever there is a dental department of a medical college or university, there is also a dental faculty, and all such schools invariably confer on the candidates a separate and distinct degree. It is needless to add that all strictly dental schools confer a degree of like character. Does this look as though dental medicine and surgery was considered a specialty in medicine? Is it lawful for an otologist, ophthalmologist, laryngologist, or gynecologist to practice either of these specialties in medicine without having first obtained the degree of doctor of medicine? You will all answer no, most emphatically. It is a fact, however, that a few doctors of medicine practice dental medicine and surgery without having obtained the separate dental degree, but, in all of the United States where the practice of dentistry is regulated by law, even these have to undergo an examination in the theory and practice of dentistry in order to acquire legal standing. You may see from this statement that the M. D. is prohibited from practicing dentistry by enacted laws, unless he adds to it the dental degree or obtains the requisite license by undergoing an examination. It is likewise true that dentists are not allowed, or permitted to practice medicine, unless they obtain a license by examination or possess the M. D. degree. It follows then that the practice of dentistry to-day, in nearly all civilized countries, is based on the possession of a separate and distinct degree or license, and that dentists are legally prohibited as a class, from the general practice of medicine, or from exercising their knowledge as specialists in medicine beyond certain limits. The conclusion is forced upon us that dentistry is a profession in itself, that a dentist is not a specialist in medicine legally considered, only in so far as he is a doctor of medicine, by the thoroughness of his study and instruction, in gaining the title of doctor of dental surgery. A recent writer, who is a graduate of a dental and also a medical school, asks this question: "Are not the organs



contained within the oral cavity, parts of the human economy, and if so, how can the treatment of disease in this locality be considered otherwise than as a specialty of the great healing art as comprehended in the term medicine?" He proceeds then to assert, in answer to another assertion, "Dentistry is not a specialty in medicine," that he can not allow such a statement to go unchallenged, and further says: "While I am sure there will be many men far more able than I who will satisfactorily answer his paper (referring to the author of the assertion, 'dentistry is not a specialty of medicine') I feel it my duty as a graduate in dentistry, and in medicine, as a dentist and a specialist in medicine, to enter my protest." A little further along we get at the gist of his protest in the following remarkable statement: "Now as a matter of course a man can not properly be a practitioner of medicine or any department thereof unless he bears the distinctive degree of M. D., and a man is not in the fullest sense a specialist in medicine unless he has legally been made a doctor thereof. \* \* \* Can any man, then, who is not an M. D. be regarded as a specialist in medicine? Strictly speaking he can not." Further comment or extract is unnecessary, for my purpose in addressing you to-day is to give a correct picture of the present vexed question, allowing you to draw your own conclusions from the evidence presented.

This brings us to the question of the hour: The limitations of the practice of dental medicine and surgery. From what has been said, you may learn from the legal standpoint, that you are limited in practice, to the treatment of diseases and injuries of the mouth and teeth—the replacement of teeth lost, treatment of fractures and dislocations of the jaw, the correction of deformities of the mouth, jaws and palate. It is not certain that you would be held guiltless if you administered an anæsthetic for the extraction of a tooth, performed a plastic operation to restore the lips or nose, or wrote a prescription to relieve constipation, unless you possessed the title of doctor of medicine, and were practicing dentistry as a medical specialty. By courtesy or common consent, dentists administer and prescribe remedies to a limited extent, give general anæsthetics (indeed, a dentist discovered anæsthesia), but from the legal aspect they have no right to do so, and in case of a fatal result, a dentist might be



indicted and tried for manslaughter, or even worse. Those of you who wish to practice dentistry as medical specialists in the eyes of the law, must take the prescribed course in a medical school. In the prosecution of your studies in a special school devoted to the teaching of dental medicine and surgery, your opportunities for acquiring a knowledge of general anatomy, physiology, chemistry, histology and other fundamental branches of the science of medicine, are just as good as are afforded in any medical school, but a thorough acquaintance with all these, including the theory and practice of dentistry, does not transform you into doctors of medicine. You may become oral pathologists or oral surgeons, and have an extensive knowledge of *materia medica*, be accomplished therapeutists and bacteriologists and still not be specialists in medicine from the legal standpoint. A few years ago the American Medical Association established a section on dental and oral surgery. The International Medical Congress of 1881 organized a section on diseases of the teeth, and the same Congress has provided for a section on dental and oral surgery in the coming meeting to be held in Washington in September next, but membership is denied to dentists who have not the regular medical qualifications, except by special invitation. This is historically correct. Many members of the dental profession have sought to be recognized as specialists in medicine, by virtue of their attainments, and the possession of the titles L.D.S., D.M.D., D.D.S., etc., but up to the present time such recognition does not mean full fellowship in medical societies or medical congresses, except by special invitation. All of the foregoing, while it is strictly accurate, does not and can not mean, that the practice of dentistry is beyond the pale of medical specialism, for the practice of dental medicine and surgery has been, and is now, of the greatest benefit to mankind. It is a department of the healing art more widely known and much more extensively practiced than any and all specialties of medicine, as is evidenced by the number of persons engaged in its practice throughout the civilized world. In 1817 there were fewer than four hundred dentists in the United States, and not a single dental college in existence in the world. To-day we number upwards of fifteen thousand, with twenty-six dental colleges or dental departments of other schools in operation, a score of

journals, and more than one hundred dental societies, meeting monthly or annually. The separate dental literature of the world aggregates nearly three thousand works, many of which antedate the eighteenth century. The history of dentistry during the present century shows that those persons engaged in its practice have acquired their knowledge, with few exceptions, from private tutors or in dental colleges, they have established a periodical literature of their own, have organized and maintained distinct societies, and during that time the name dentist and dental surgeon has become fixed, and the dental profession has been recognized by the people and the State as separate and distinct, and in nowise a dependency of medicine. The practice of dentistry, as we find it and practice it, is so dissimilar from the practice of medicine, that so far it has been found impracticable to teach it, and include under the title M.D., both the dentist and the physician. Until there shall be a complete revolution in the teaching of dental medicine and surgery, the abolition of separate dental schools, a re-enactment of laws consolidating medical and dental boards of examiners, the two professions, of medicine and surgery on the one hand, and dental medicine and surgery on the other, will continue to keep pace in their efforts to relieve suffering, having a common aim, being self-respecting and respected, jealous of each other only in their strides for scientific advancement, and their joint endeavors to prolong the duration of human life.

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### QUESTIONS OR AXIOMS.

AN ESSAY READ BEFORE THE MASSACHUSETTS DENTAL SOCIETY, DEC. 10, 1886.

BY FRANK M. ODELL, D. D. S., M. D., NEW YORK.

The many inquiries which I hear from time to time, as to how you would perform this or that operation; as to whether you employ the electric mallet, the Bonwill engine, or the Herbst method in packing your gold; together with the expression of doubts as to the ability of an operator to perform his work well by the one or the other mode of procedure, have often suggested to me the propriety of writing some such article as this occasion has induced me to attempt.

Starting in life in the firm conviction that the universe, and

this little speck therein which we term "the earth," with all that is contained therein and thereon, are the manifestations of a pre-determination on the part of infinite wisdom and power, I had no difficulty in arriving at the conclusion, that the highest aim of those who in any sphere of action would approximate perfection, should necessarily be to so interrogate nature as evidenced in the most perfect or oft-recurring forms of her manifestations, as to arrive at a fair understanding of the laws governing their evolution, production and development.

Assuming that all these processes are the results of well-defined laws, we have only to direct our attention to the discovery of those laws, in order to be enabled to not only recognize normal or abnormal presentations as they occur, but we shall likewise be enabled to follow many of these processes in the regular order of their succession. Perchance we may also determine the precise stage at which normal progression ceases, and abnormal developments or retrogressions begin.

Hence we may learn in many directions just when, and where, and how, our interference may be beneficial in the direction of normal development, or in the prevention of abnormal departures therefrom.

We may learn just where the impact of energy is inadequate to the continuance of certain well recognized processes, and where consequently a little stimulus or assistance may prove advantageous.

In some cases we may even be able to supplement such processes at such time and in such manner as shall conduce to their full and proper continuance, and perfection of evolution.

Where our interference may prove of no avail, as up to date seems to be the case pretty generally in most cases of cleft palate, we may resort to mechanical aids. And here, as elsewhere, the more thorough our comprehension of the laws governing all the conditions, the better shall we be able to direct or construct appliances calculated to overcome the defect.

The same general principles hold good whether applied to the departments of orthopædic surgery, orthosomatics, staphylo-rhaphy, oral surgery, or the various departments which we recognize as dentistry.

In replying, therefore, to the inquiry, "Can an operator do

good, faithful work by this or by that method of procedure," I would say, that depends entirely upon his knowledge of the laws governing the organs upon which he operates, and of the materials which he has at his command.

Whether the thorough dentist packs his gold by the pressure of a hand instrument, or by the direct impact from a hand-mallet or an automatic; whether by a mechanical or an electric; whether by the spreading blow of an electric or a mechanical when properly handled, or by the centrifugal force applied in the Herbst method; and not forgetting by any means the gentle spreading or plastering motion promulgated years ago by my esteemed friend Dr. T. D. Shumway, thorough knowledge and skill, acquired by patient study and long practice, comprising that education of the fingers and nerves which neither masters nor books can give, but which is attained only by the honest, patient worker, seeking the highest good of those who intrust their precious dental organs to his care, the method amounts to very little: The man—the honest, faithful operator—is the "summing up" of the law and the prophets.

From this standpoint how is it possible for an honest man to perform his work in the manner which seems to have obtained the most popularity?

Is it the part of professional honesty to extract a tooth simply because a patient demands it, because too mean or shortsighted to have it properly treated and saved? Should you not rather impress upon the mind of that patient the fact that his little fee is not able to compel you to do that which you conceive to be wrong?

Can a man who is honest, deliberately extract all excepting the extremity of the root of a tooth, by the aid of the cutting forceps, leaving the apex, with its accompanying abscess-sac, to be overgrown by the gum tissue?

Can an honest man do considerable extracting and use the cutting forceps exclusively?

Is an operator justified in filing off the distal and mesial surfaces of teeth on a bevel, leaving the triangularly-shaped openings with the bases of the triangles toward the crowns, in order to save a little time for himself or a little *present* money for his patient?



Is an operator justified in extracting the six-year molars because they have many cavities, on the plea that the patient will not stand the expense of filling, or on the plea that the operation will give more room for the remaining teeth, or on any other plea short of, that they were past human aid before they came under his observation?

Is an operator justified in extracting one or more of the incisors or cuspids which may happen to stand out of line in the dental arch, because it can be done at an expense which is insignificant, when to bring it into line would be quite expensive (thereby, perhaps, pleasing the parent or guardian of the patient in reducing present cost of dental services), to the life-long annoyance and disfigurement of the patient?

Has an operator a right to insert a filling of a permanent nature into an only partially prepared—cleansed—cavity, under the plea that it is for a limited term of service only that the filling will be necessary; the idea being conveyed thereby that not much expense upon it is to be incurred?

Has an operator a right to cut away a vast amount of perfect tooth structure for no other object than because he can put a filling into the cavity so constructed in one hour, when to do it in a manner which will save a far greater portion of healthy tissue might occupy three or four times as long?

Is an operator justified in administering nitrous-oxide or other anæsthetic to every patient who demands it, or worse still, in offering it to every patient who presents, or greater depth of degradation, in broadly advertising "teeth extracted without pain by the use of, etc."?

Is it allowable nowadays to immediately destroy pulps of teeth, when by a little patience the chance is that they might be saved alive?

Is there any justification for extracting very loose teeth when their necks are denuded of gum and they are badly coated with salivary calculus, or even worse, when they are painful and the pus exudes freely upon the slightest pressure?

Is there any justification for cutting off the crowns of several fine healthy teeth in order that a nice, or even an elegant piece of bridge-work may be fitted to the mouth?

Can a man become a dentist at all, if he is not deeply versed in microscopy and histology?

Is it not the absolute duty of everyone proposing to practice dentistry to first prepare a good medical foundation before attempting the study even, much less the practice of dentistry?

I might even ask, can any man hope to ever be of any account in our profession without a foundation being laid in an exhaustive study of dynamics?

Is it within the bounds of a reasonable probability to suppose that a dentist can ever evolve from the entity of one who does not practice staphyloraphy?

Gentlemen, these questions are not the vagaries of a mind diseased, but are simply a repetition of claims put forward from time to time by men who, for years, having banded themselves together with that end in view, have sought to be known as the leaders in dental societies; men who have from time to time endeavored to enforce their views or hobbies in dental circles and make them the accepted dogmas of the profession.

I have simply brought these expressions of their views, in the form of questions or axioms, into juxtaposition that you might be able the more readily to compare them, draw your own conclusions, and pronounce as to how much sense or nonsense they embody.

Gentlemen, when I accepted your invitation to be present as your guest, at this your annual meeting, and the further invitation to read before you such a paper as I might choose to present, I determined to take up about one of these inquiries, pursue it exhaustively, and reply to it according to the light which I might have upon that subject. But my battle is not with the practitioners of dentistry individually and solely. I recognize the fact, that notwithstanding the boasted superiority of dentistry as a profession, over medicine as a profession; of dentists, as an intelligent, honorable, fraternal, charitable, self-sacrificing, scientific, profound, original, untiring body of men, such as are not now, and probably never will be, world without end, exceeded upon the face of this planet, we are still in our infancy as a profession, are not to be bound for the future by any set of cast-iron rules, formulæ or ideas, which may be made, or formulated, or resolved upon in this year of grace 1886: but that in order to maintain our position,

we must ever be bound and controlled by the simplest rules of common sense, and by the further fact that that very unusual commodity is so really rare, that for many years the breed of real dentists may not very rapidly increase.

Certain it is, that our calling will always make large drafts upon that quality which we designate as "judgment;" without a goodly share of which, there can be no true dentists.

I prefer to leave this subject here, for the present at least, inasmuch as I desire to willfully tread upon the toes of no man; the more especially as we are situated so vastly dissimilarly in our various spheres of action, as to make that which is light, or right, for me in my field, not necessarily light and right for you in yours.

If therefore I have been able to suggest to you, some subjects for thought or consideration or labor for the future, I shall not have visited you in vain.

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## PROCEEDINGS OF SOCIETIES.

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### NORTHERN ILLINOIS DENTAL SOCIETY.

ROCKFORD, FEBRUARY 16 AND 17, 1887.

The first regular meeting of this society was held on the above date. After the transaction of miscellaneous business and the reading of the constitution and by-laws, and the fixing of the time of holding the annual meeting on the second Wednesday in October, the president, Dr. A. B. Elmer of Rochelle, delivered the annual address as follows:

#### ADDRESS.

We have assembled here to hold the first regular meeting of the Northern Illinois Dental Society, which is an association formed for the mutual benefit of members of our profession.

These unions are rapidly increasing, and will unquestionably aid in raising dentistry to a higher place among the professions, for in union there is strength.

We have met here, then, fellow practitioners, for that mutual exchange of thoughts, ideas and experiences which will aid us in attaining the goal for which we are all striving, namely, consummate excellence.

What changes have been wrought in the past century by the inventive skill of man! In no field has this change been more marked or more rapid than in dentistry. There are few professions whose origin have been so recent as to leave us any knowledge concerning their beginning. This is not the case in ours however. During the sixteenth century the first dissertations upon the anatomy and treatment of the teeth were given to the public.

The seventeenth century was more favored, while the eighteenth, produced some masterpieces from the pens of progressive thinkers.

Until the latter part of the eighteenth century dentistry was confined to Europe, being introduced into our own country during the Revolutionary struggle.

The great progress made in the dental profession has been contributed to and stimulated not a little, by the organization of colleges, publication of journals and formation of societies.

An important event in the history of dental surgery in this country, was the formation of the American Society of Dental Surgeons in 1840, the first of the kind in America. Two years later another society was formed at Richmond, Va., and in 1844, a third was formed at Cincinnati, Ohio. In 1850, the National Society was organized, and in 1863, the Odontographic Society of Philadelphia. To-day, in addition to these, there are throughout the country, a large number of State and county societies.

The law of the universe is that of progress. A growing desire on the part of liberal and educated men in the profession, that their specialty should be raised above the mere mechanical trade, has created a necessity for some medium through which this may be accomplished. This is being done to a great extent in our colleges; to a great extent, I say, and yet only so far as a foundation to the knowledge, which each one who honors his profession must acquire.

Let me say to the younger members of our profession and to those who are still students, if any such be present, be eager for



the facts that belong to the substructure, rather than to those that belong to the finish of culture.

The deeper you go into principles, the higher you will rise in results in the years to come. Would that you might account these years as precious to you, as those who are engaged in the wear and waste of professional toil know, and feel they are.

Concentrated power and untiring research shall bring to the laborers a sweet mental satisfaction.

My friends, it devolves upon the society, the journal and individual experience, to elaborate the structure of, and lend the finish to our knowledge.

The Northern Illinois Dental Society is a subdivision of the State association, therefore its name and object is materially the same as that of the former, yet I consider that we individually, reap more benefit from being members of the district association.

This is a self evident fact, because we have more time to deal with the practical and minor points, while the state society must of necessity, develop and dwell upon the more scientific topics.

In order that we may be worthy members of a society, we must perform the parts allotted to us to the best of our ability and realize, that upon each of us, as well as upon the society as a body, rests the responsibility of elevating the standard of dentistry.

With this end in view, I assume the duties of President, hoping to faithfully discharge them.

#### CLINICS.

In the afternoon, Dr. Cormany made a large filling in a central incisor, mesial and distal cavities united by building across the cutting edge, and considerably elongating the tooth. The special feature of the operation was the use of the Bonwill engine mallet, with which the gold was packed, (after making the foundation at the cervical portion of the proximal cavities with an automatic mallet,) using a very large foot instrument for most of the condensation. Dr. Noyes filled a large mesial cavity in a lateral incisor, extending high under the gum. (The margin exposed with difficulty by severe crowding of rubber and gum with a wedge); the lingual wall of the cavity gone and the pulp very nearly exposed. There was nothing especially noteworthy or peculiar about the case, or the operation.

Arrangements had been made to have some clinics on Thursday afternoon also, and one was given by Dr. E. H. Allen of Freeport, a very large operation in a bicuspid, using the electric mallet. Your reporter was obliged to leave about the time the cavity was prepared and did not see the filling—the upper portion of which was to be of gold and tin.

A FEW THOUGHTS ON OPERATIVE DENTISTRY.

The following paper was read by Dr. G. W. Dennis of LaSalle, Ill.:

At the last meeting of the Illinois State Dental Society, Dr. Barrett said in response to a request for an explanation of one of his operations:

“This society does not need to discuss methods, it is beyond that.” Scientific generalities were (inferentially) then the proper subjects for discussion.

With all due deference to such distinguished authority I for one must beg leave to differ.

It is hardly probable that a large number of men of any calling or profession, can come together without having some among them who desire practical hints. We all need them, even our best and most honored men. Operators and theorists of pre-eminent ability have repeatedly expressed their gratification at receiving ideas of great practical value to them, and if they are so fortunate, surely we of the rank and file of the dental army may profit too. This is not meant as an apology for what is intended to be an entirely practical paper, for although you have all probably gone over every portion of the ground covered by it in actual experience, and though not a single new idea may be advanced, still if it serve to provoke discussion among our better qualified and abler speakers by which we may profit, your essayist will be satisfied.

We will first consider the treatment of the deciduous teeth. The importance of preserving these teeth until the proper time for their removal, is well understood, and should be emphasized, and impressed on the minds of parents by every dentist in the land.

Most parents are unwilling to expend any considerable amount upon such teeth, as they do not recognize their importance suffi-

ciently, knowing that they must eventually be lost. Argument and teaching however will convince many, and for the sake of the children, as well as to earn their gratitude and maintain an interest that will last to maturer years, it is the dentist's duty to endeavor not only to perform these operations well, (which is not always an easy matter) but to make the fee so reasonable, as to not completely frighten parents blessed with a numerous progeny. Shoe bills and dentistry, a man remarked lately, will ruin me yet. These prices need not interfere with ordinary operations, and though actually worth more to perform the same operation for a child than for an adult, yet it is a work of such importance that none can afford to slight it. Kindly manners and tact will work wonders with the most timid child, and all operations of limited duration can be performed, even to using the rubber dam, if judgment be exercised. My own operations on these teeth have become narrowed down to very limited boundaries. Small cavities not reaching the pulp are excavated as thoroughly as possible and filled with gutta-percha, or amalgam, according to depth and position. If the pulp is exposed fill with oxyphosphate of zinc, and request the parent to bring the child again in from four to six months.

Experience teaches me that in the peculiar conditions present at this time in children's mouths cement lasts but a few months, even when carefully inserted, and protected with the dam, it will wash out. Why then use it? Because the use of arsenic is objectionable in these teeth, and the cement soothes and assists the pulp to a painless death. When once fairly exposed and inflamed the pulps of deciduous teeth are sure to die, and they have not sufficient vitality to live long enough, to allow the phosphoric acid time to get up its customary, painfully inflamed condition. When the pulp is dead, open into the pulp chamber wash out and remove the debris from the roots, and if putrescent apply carbolic acid once or twice, and fill roots and part of pulp chamber with oxychloride of zinc, mixed thin, so as to run down into roots, then fill cavity with amalgam or gutta-percha. The oxychloride will disintegrate and not interfere with the processes of nature, in removing the roots, before the *incoming* permanent tooth. I have practiced these simple methods for years and find them successful, but very few cases of abscess or other disturb-

ance having resulted from such fillings. Closely connected with this matter of deciduous teeth is the still more important one of the sixth year or first molars. The line of the dentist's duty is plainly toward advising stringent prophylactic measures, but as these are habitually disregarded by most families, what next is to be done? When decay progresses so far as to cause trouble before the eighth year, the pulp should be capped or destroyed and a filling inserted for the purpose of retaining the tooth temporarily, at least, as they are at this time, the principal grinding teeth, but if badly decayed, later than this, they should be extracted, as the probability of extended usefulness is small, and the second molars will so nearly fill their places that their loss will not be felt so greatly. Having mentioned oxyphosphate of zinc, a few words regarding that useful, yet dangerous article, may not be out of place.

Its usefulness, while considerable, is limited within narrow bounds, and it certainly proves a veritable invention of the devil if tampered with extensively. Teeth of medium and poor structure, with large fillings of this material, frequently present the appearance of incipient abscess, pulps and periosteal membranes highly inflamed and often dead pulps.

Some time since we found four incisor teeth, filled by a competent dentist, before (in three of the cases) exposure of the pulp had taken place. They had been filled less than a year, and had three and one-half dead pulps, or, rather, three were dead and the fourth about past feeling. Did you ever see such a case if oxychloride were used for a lining? the pain and irritation caused by oxychloride may be obviated by first using a small amount of oxide of zinc mixed with carbolic acid or oil of cloves, and the stimulating action of oxychloride assists the pulp in preserving its vitality. Chloride mixed with the oxide, as prepared for use with phosphoric acid, sets very quickly and gets quite hard. If the cavity is very large, a thin coat of oxyphosphate may be used for expediting matters. But the evidence is strong, that the phosphoric acid will eventually cause trouble in teeth of poor, or medium structure, in which fillings of considerable size have been inserted; and its extensive use as a filling will go far towards ruining the practice of any man, no matter how well established. It works easy and appears well, but look out, for it's loaded!



Another invention or so-called improvement which is well designed to catch the unwary is the matrix. For compound plastic fillings they are very useful, but even with amalgam, would cover the cervical border before applying. How anybody can expect to make tight margins with one of these remarkable incumbrances to impede their view, is a mystery. A late one has been invented, we learn, that fits so loosely that the cervical margin can be packed over without interfering. Of what service is it then but to give symmetry to the filling, which is really no help at all. Probably it will be but a few years, when the admirers of these articles, will find their fillings failing, through soft and poorly packed margins, and they will say, as did a prominent operator lately, that he would have saved himself much mortification if he had never used one. They are fit tools for operators who cover their cervical margins with amalgam, to make a tight joint and try to pack in the gold while the amalgam is yet soft. The matrice would hold the materials in place, and a filling could be made rapidly if not substantially. Any dentist who can not make a good gold filling, in a large majority of cases with the present forms of gold and appliances, had better quit and go to the Legislature. One great point in filling teeth is to obtain plenty of room. This must be done either by wedging fast or slow, or by cutting or both cutting and wedging, but free access must be had if good work be done; where the patients of a dentist are mostly from a distance, as in small towns, depending on country practice, better results will usually be obtained by the average dentist, by permanently separating tooth substance and contouring as much as possible, so that the fillings will touch. Quick wedging demands much care and practice to be successful, though, when possible, slow wedging is the best manner of separating. Too much cutting is to be deplored, but as a rule the reverse is practiced, and in frail proximal walls of bicuspid and molars, all portions should be freely cut away that are in any danger of breaking off, and should be protected by the filling. In the anterior six teeth cut freely even if the filling is thereby made to show considerably. It is better so than to make a poor operation. In bicuspid and molars in nearly all cases the cavity should be opened from the grinding surface, forming a good retaining point in the sulci, then separate through the whole wall

so as to leave nothing in contact, dressing heavier the nearer you get to the point of the tooth. Now with small inverted cone burs, square the floor of cavity next to the cervical margin, and slightly undercut the cavity well back from it. Take large mats of soft gold very slightly annealed and press into cavity gently, then, holding in place with an instrument in the left hand, pack smaller pieces in until it is firmly anchored; now build a thick flooring extending out to, and carefully packed over the cervical border until cavity is one-quarter or one-third full a then dress cervical border about as you wish to leave it, and rub down with a burnisher. If more room is needed, insert a wedge against finished border and build up the filling. When done packing drive the wedge a little more and finish the approximal surface with thin strips, for which purpose, when kept dry, no better can be found, than common emery and sand paper of the shops, cut straight on edges. It is superior to most strips in the market. Polish with soft rubber points and prepared chalk, using the engine.

In extreme cases the filling may be commenced in the sulci and carefully built down into the cavity. Only a very thin sheet should be built over at first; just enough to start the filling and secure stability. Then build from the bottom of cavity as before, good firm borders, careful yet sufficient malleting, perfect dryness, and thorough work throughout will crown the earnest laborer with success. Don't try to do two hours work in one. Some men hurry through everything, often making double work, and failures too, by so doing. Remember we can not all pack a book of gold in forty-five minutes, as Dr. Bonwill is said to do with his electric mallet. Position is another great point in filling teeth. Get your patient seated properly, explain what you want, and gently but firmly insist on their keeping just so, and it will assist greatly.

In root fillings probably nothing does better than gutta-percha cones. First, dip in a thick solution of gutta-percha and chloroform, then pass quickly into the canal without heating. The chloroform will soften the cone, so that it will pass easily, and more thoroughly stop the apical foramen if forced a little, after being in position a few moments. For crooked and small canals of upper molars, a small soft gold wire dipped in

the solution and forced in carefully, is often advisable. For the flat canals of lower molars, oxychloride of zinc mixed very thin, and worked in with a small, smooth broach, without being wrapped with cotton. It will flow in if once started, with little trouble. The Gates drill is probably the best instrument in the market for enlarging root canals. The delicate point follows quite crooked canals readily, and it throws all debris behind, not forcing it through the end of the root, and if several sizes are so used forcing will not be necessary, there is little danger of breaking. With debris cleanly removed from the canal, the work of rendering it antiseptic is nearly accomplished.

The question as to which is the best and most durable porcelain crown, is important at this time, when this operation is receiving so much attention. Probably the How crown is by far the strongest, and is not difficult to apply. A great assistance in setting these crowns is (after root is prepared, post set, and crown ground) to attach in the proper position, fastening with wax or gutta-percha, then mix oxyphosphate of zinc, and quickly invest the crown and two adjoining teeth on the labial surface, passing a piece or two of binding wire into the cement while soft, and after it has set a moment, wrap the wire around other teeth for greater security. The cement should be forced through between crown and adjoining teeth, and can be molded with a spatula against them, then cut away surplus so as to form a matrix in which to pack the amalgam. Proceed as usual, using a pad on the cement to prevent breaking it with pliers while tightening the pins, under which amalgam should be packed before bending over the post. If quick setting amalgam be used, the cement can be removed in from twenty minutes to half an hour, but it is advisable to use a thin layer of cement, and leave on all night. This insures a good operation. For bicuspsids and molars, nothing equals the gold crowns for strength. Much trouble is experienced in extracting them.

To conclude, the practical dentist must be well provided with instruments, and must know how to use them. Must be able to decide quickly and act promptly. He must not rush to extremes. He will not cap every exposed pulp, and, if his neighbor does it and he meets some of his unsuccessful cases, he will not decide that capping is all wrong and destroy all that he may find, but



adopt a medium course. He will not condemn all roots because some are unfit for crowning, and lastly, he will be very judicious in his use of oxyphosphate for tooth filling.

#### DISCUSSION.

DR. TAGGART in reporting upon the clinics said he would have used the engine, for preparing the cavity, instead of doing it wholly with hand instruments, as Dr. Noyes had done.

DR. KITCHEN, speaking of Dr. Cormany's clinic, said he should fear some battering of the gold under wear, when packed so rapidly, in such large pieces, and with such large pluggers. Had found it difficult to prevent this, even when he used fine points and very thorough malleting. Preferred the use of iridium or platinum and gold in such cases.

DR. CORMANY would have used platinum-gold, but he brought none with him. In the case under consideration there was little liability of the gold spreading, as the teeth closed over the lower ones. The gold in this operation was placed on the end of the tooth, in smooth layers, and he believed the consolidation was perfect, notwithstanding the size of the pieces, and the use of a large instrument. He can prepare cavities, by using sharp burs in an engine, with less pain than by the use of hand instruments. His object in giving the clinic, was to show how easily all the work could be done without an assistant, by using the engine mallet.

PRES. ELMER said that in the tooth filled by Dr. Noyes he would prepare the cavity with hand instruments, instead of using the engine, because the pulp was so nearly exposed.

DR. ROBERTS defended the preparation of cavities by hand, as being less painful. Having had both methods used in his own mouth, and finding the engine work twice as painful as the hand work.

DR. TAGGART believed that a careful operator could use the engine, *in suitable places*, more rapidly and without increase of pain.

DR. HANAFORD said that the loop and band matrices admit of packing gold well over the margin, where the greatest danger and difficulty lies, if a matrix is used. The lateral margins are more difficult than the cervical. The body of a cavity can be



filled more rapidly if a matrix is used to confine the gold. In filling distal cavities in lower molars, the bright steel of the matrix will reflect light enough, to enable one to see into them better than without it.

PRES. ELMER said he had found oxychloride of zinc to preserve the temporary teeth better than amalgam.

DR. DENNIS remarked that the cements (oxychloride and oxyphosphate) last better, in the teeth of very young children, than they do after the process of shedding the temporary teeth has begun. The condition of the mouth during the period of displacement of the temporary teeth, being more likely to cause the dissolving out of such fillings, than during the years previous to that time.

DR. MAGNUSSON congratulated the society upon their "new departure in letting down the bars," and receiving members without any tests or examinations. The dental law in this state has now been in operation a considerable number of years, and furnishes a sufficient guaranty of the reasonable fitness of the men now in practice. Said he had lived thirty-three years in Chicago, and there are only two men now in practice there, who were practicing when he came. Then, the only things required of a young man who wished to practice dentistry were, that he should be a good mechanic, and have a copy of "Harris."

DR. A. W. WRIMMER asked how to get out lower wisdom teeth in difficult cases. He thought a Watling forceps which had been recommended by Dr. Dennis for that purpose, would not always succeed.

(The fact that such a tooth had been pulled at, without success, at the clinic the previous afternoon added point to some of these remarks.)

DR. DENNIS thought the Watling forceps to which he referred might not have been exactly understood, and described it, adding that in a year and a half since he procured it, he had failed to find a tooth that it would not bring out.

DR. ROBERTS said he had two "Watlings," of different shapes, and had another forceps made (for a particularly difficult case) with lancet shaped blades which could be forced more deeply and easily into the socket, acting somewhat as a pair of wedges, to lift the tooth out as the blades are forced down.

DR. KITCHEN described a device used by Dr. Bradley of Beloit for polishing fillings, a common straight wood point for an engine porte-polisher is sawed at the end with a thin separating file, and a narrow strip of sand paper passed through the slit; the revolution of the engine winds it up, and it can be used till worn out.

DR. NOYES, referring to what had been said in the paper about matrices, said he believed that when they are used, a large part of the work should be done with non-cohesive gold, and that they should be used only in filling cavities that are of such shape as to retain a non-cohesive plug. Of course the grinding surface may be made of cohesive gold. If cavities are so shaped that the retention depends wholly upon retaining points and grooves, and the solidity obtained by building up the entire plug with cohesive gold, a matrix would be of no use, and would be greatly in the way, increasing the difficulty of accurate and thorough manipulation.

DR. HANAFORD read a letter from a dentist describing a case, believing that it was a case of true dental neuralgia.

DR. TAGGART. The dentist whose letter Dr. H. has read does not appear to have followed up any single thing that would be likely to bring about a cure of the case. He drilled open a painful molar, giving relief at the time, but neglected to follow up the treatment of it, and he appears not to have succeeded in extirpating the pulp in the lateral incisor.

DR. ROBERTS spoke of a case which developed into neuralgia in the nose, the side of the face and forehead. There were many fine gold fillings in excellent condition, and knowing the operator who made them, he felt confident that they were all right. The neuralgia being periodical, and greater after exposure, he suspected malaria and gave quinine, without result, and had no better success with Fowler's solution. Finally suspected rheumatism and gave five grain doses of quinine followed by salicylate of soda which cured the neuralgia in two days.

DR. DORN described a case which came to him about two years ago, a woman about twenty-two years of age, with a very tender upper molar which was sound. She finally insisted upon its extraction, and he found the pulp extensively calcified. The

same difficulty developed successively in one tooth after another, till finally all the upper teeth were extracted.

DR. ROBERTS raised the question whether the teeth in the case described by Dr. Dorn might not have been saved by extirpating the pulps. Subject passed.

Elgin was chosen as the place for the next meeting, to be held on the second Wednesday in October, 1887.

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The "Chicago Dental Club" have perfected arrangements whereby a series of clinics will be given monthly at the offices of members, the first clinic being held at the office of Dr. C. P. Pruyn, Monday afternoon, April 25. A number of invitations were sent to dentists who were not members of the club, and also to dentists residing in various parts of the country. Among those present from a distance were Dr. Siddall, of Oberlin, O.; Dr. Mullett, of Iowa, and Dr. Knox, of California. About fifty dentists, all told, were present to witness the various operations performed, and also to see and examine the great variety of new and novel instruments, machinery, etc. A number of new appliances were exhibited, those of chief interest being a new electric motor for running the dental engine, invented and perfected by Dr. McIntosh. This motor seems to run with less noise and communicates more power than any heretofore examined by the writer. The speed also, to a certain extent, can be diminished without reducing the power of the motor. Dr. McIntosh also exhibited an electric cauterizing needle which can be utilized for drying out root-canals previous to filling. It has many advantages, chief among which are that the small platinum point can be introduced into the canal, and properly adjusted before the current is needed. The instrument is so constructed that the current is under complete control of the operator, using as much or as little heat as may be required to do the work. A new matrix was exhibited which has some merit, it being a modification of the Brophy matrix. Numerous other appliances were on exhibition, but space will not admit of mentioning all. Dr. L. P. Haskell demonstrated his method of taking plaster impressions of both the upper and lower jaw, also his manner of pouring the metals for dies and counter-dies, swaging plates, and explaining many other practical points incident to the making and adapting of a perfect artificial denture to the mouth. The clinic was decidedly instructive from beginning to end, as was evidenced by the interest of the observers. Dr. Mullett, of Iowa, filled a left lower lateral incisor, using an electric plugger of his own invention. The merits claimed for this mallet by the inventor are, lightness, and little machinery. The current is controlled by a button manipulated with the foot, enabling the operator to have free use of the fingers. The plugger can be operated with a current from the battery or a dynamo. Dr. J. G. Reid demonstrated the method of filling root-canals with chloro-percha, the case being a left lower second molar in the mouth of a boy twelve years of age. Dr. Woolley exhibited, and demonstrated upon the same case, an instrument of his own invention for drying root-canals. Several interesting cases of various abnormal conditions of the oral cavity were present for examination. Upon the whole, the clinic was a success in every particular, and no doubt much benefit will accrue to the members from such a movement. The DENTAL REVIEW heartily endorses such efforts.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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EDITOR: A. W. HARLAN, M.D., D.D.S.

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## ROOT FILLINGS.

In the December REVIEW we called attention to the abuse of cotton as a permanent root filling, not advocating any particular method at that time. From that date to the present, we have removed at least a dozen oxyphosphate fillings from pulpless teeth, and found cotton in the roots, and the O. P. very badly disintegrated in every instance where it had been used to moisten the cotton with, previous to packing it into them. It seems as though very many dentists, who are good operators in filling with gold, still persist in stopping roots with such plastics as oxychloride or oxyphosphate of zinc, for what reason no one can tell. In due time disaster will follow such operations in every case. Not so with gold or gold wire, lead or tin, gutta-percha or even shellac or paraffine. We must persist in frowning down any such unscientific method of filling roots as a general practice. If the dentist would always dry the canals, and could certainly reach the apices of roots with the zinc preparations, before the setting process begins, and leave out the cotton and keep the cement dry until thoroughly hardened, it might do to use such plastics. But they do not use such care, and there are few cases where the plastics can be carried to the end of the root, without using cotton, and it will not hermetically seal the end of a root. Why not adopt a more certain method and secure better results. An acute alveolar abscess is no small thing for most people and



often it is very distressing to a dentist, who attempts to abort it, when such fillings are in place. We again urge those of our readers who use these materials in root filling, to adopt other methods as more certain in results, to both operator and patient.

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### A METHOD OF TESTING THE VITALITY OF A TOOTH'S PULP.

To determine whether a tooth's pulp is living or dead is the first question to be decided in the diagnosis of every case of odontalgia, the dentist is called upon to treat. Many obscure cases present in which this is a difficult point to ascertain, as occasional errors in the practice of the most careful will witness. Therefore any improvement in method which will facilitate the detection of the pulp's condition and render the result more certain will be appreciated by all. A simpler and more efficient method of applying heat than that usually employed for this purpose, was suggested at the April meeting of the Odontological Society. It is as follows: The preliminary isolation and drying of the suspected tooth and the immediately adjoining ones is the same as by the old method, although the rubber dam is not so essential. The tooth is then tested by applying to it a piece of gutta percha which has been heated over a flame. It takes hold and transmits its heat at once and there is an almost immediate response if the pulp is living. If there is no response it may without being again heated, be applied to one of the adjoining teeth, with a known living pulp and the comparison noted. The old method of testing with a heated steel instrument is terrifying to a nervous patient and the response if the pulp be alive is often tardy in coming or may be entirely absent. Apprehensive patients under the influence of fears or imaginings will frequently, when a heated instrument is applied, mislead the operator by declaring that a tooth is sensitive when you know it to be pulpless.

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### THE LOW PATENTS.

We have received the following in connection with the Low patents and the International Tooth Crown Company, which is published as a matter of information to dentists:

CHICAGO, May 2, 1887.

DR. ALISON W. HARLAN, 70 Dearborn Street:

*Dear Sir:*—I am instructed by Dr. James E. Low and the International Tooth Crown Company to call upon you for a settlement of profits and damages for your infringement of letters patent granted to James E. Low, dated March 15, 1881, and numbered 238,940. This patent covers the work known among dentists as bridge work, as well as other improvements. This patent has recently been sustained in three separate cases in the Circuit Court of the United States in New York city and in New Haven, Connecticut, by the decisions of Judges Wallace and Shipman. My clients propose at once to proceed to collect damages and infringers' profits from all dentists who have been infringing this patent and to prevent them by injunction from future unauthorized use of the patent.

I therefore notify you in order to give you an opportunity to avoid litigation by an immediate settlement and by your agreeing to abstain from future infringement. Yours respectfully.

JESSE COX, Attorney.

## ASHEVILLE, NORTH CAROLINA.

From an expression in the letter of Dr. Field, of Detroit, in the *Independent Practitioner* for April, and a paragraph in the *Western Dental Journal* for the same month one would infer that Asheville had no hotel accommodations worth speaking of, and that it was a very uncomfortable place in which to hold a meeting, and altogether an out-of-the-way place. All of the above is incorrect, as we know from personal observation, having been on the ground for more than a week last August. By referring to the DENTAL REVIEW for March the reader may learn what our views of the matter are, and we are further assured that very shortly, Asheville, will have even more accommodations for visitors, both summer and winter, than she is now able to offer. For a pleasant place to meet in—one easy of access, and for magnificent scenery—Asheville is unsurpassed anywhere in the South during the month of August.

## MEHARRY SCHOOL OF DENTISTRY.

In the March number of the REVIEW reference was made to this institution, and it was regretted that the school did not comply with the requirements of the National Association of Dental Examiners. As a result of that notice we are pleased to chronicle the fact that the Meharry school will in future not accept five years' practice as equivalent to one course of lectures, and will so announce it in the next annual catalogue shortly to be issued. We wish this school abundant success in its special work of educating colored dentists, and we bespeak for the college of dentistry, the encouragement and support of every friend of the colored race in America.

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## THE AMERICAN DENTAL ASSOCIATION.

We heartily commend the temperate stand taken by our contemporary, the *Independent Practitioner*, in relation to the postponement of the meeting of the American Dental Association. We do not think that the meeting should be postponed until 1888, for reasons which have been stated by Dr. Barrett, and for the additional reason that we do not believe the officers have the power conferred on them to postpone the meeting for a whole year. They might go on and perpetuate themselves in office for an indefinite term were they so minded. The constitution says that the association shall meet *annually*, on the first Tuesday in August, and a postponement for a whole year abrogates that article entirely. In the next section the officers are given the authority to change *time* and *place* for "extraordinary reasons." No such reasons have been assigned by any officer in an official manner. Therefore no vote can be taken on postponement, for or against, until the "extraordinary reasons" have been promulgated by the proper officer. We see no necessity for a decision of the question of postponement until such official statement of "extraordinary reasons" is presented to the officers for their sanction or rejection.

## DOMESTIC CORRESPONDENCE.

*To the Editor of the Dental Review:*

SIR:—In response to my appreciation of your devotion to the elevation of the dental profession and dental science, I would ask as a duty to myself to explain through your journal why my name appears in the catalogue of 1883 of the Delavan Dental College. In December, 1882, I called on Dr. A. Holbrook, of Milwaukee, Wis., who in July, 1882, was appointed one of a committee to investigate the character of the Delavan Dental College, and Dr. Holbrook requested me to visit said college and purchase, if possible, a diploma at a nominal price, to be used as evidence of the insincerity of the institution. I declined at first to co-operate, by reason of ill-feelings existing between Dr. Geo. Morrison, of said college, and myself, remarking that the bait would not work in my hand. Dr. Holbrook was very desirous that I should make the effort, as such evidence would be of value to the dental profession in proving the institution to be a farce and working disgrace to the dental profession. February, 1883, I casually met Dr. Morrison in Delavan and by invitation visited the institution in question, and I then being a semi-resident of Dakota and Chicago, alternating between the two places, I proposed to avail myself of the opportunity of equipping myself with a diploma to guard myself from liability to prosecution. I was informed that it would be necessary for me to remain in Delavan till next day, when I would be provided with the requisite diploma, and at that time heard the order given that the diploma be prepared that night. All differences between myself and Dr. Morrison were set aside, and I was made the recipient of his generous hospitality, and the next day I was asked a few clinical questions, also a few anatomical questions, molded a plaster cast, received diploma, and paid a small fee for the same. I have confidence in the ability of Dr. Morrison as a dentist, but became fully aware that wholesale work was being done in the sale of diplomas, and the same was made known to me. Now I will explain my delay or long silence: I told a certain few dentists what I had obtained, and for what purpose, and subsequently



received letters from Dr. Morrison, asking me as a "fraternal duty" to himself to withhold myself from evidence against what I knew and possessed derogatory to the workings of the institution. Apparently I had but little to gain by exposure and little to lose by silence, and as I had gained my point by friendly strategy, and was then appealed to through fraternal pathos, I decided to be a non-combatant in the downfall of the institution. Hoping this brief explanation of all points of interest in question will be gladly received by my friends, I am, truly yours,

DR. A. E. OVIATT.

CHICAGO, April 18, 1887.

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## FOREIGN CORRESPONDENCE.

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### LETTER FROM CUBA.

#### THE CONDITION OF DENTISTRY IN CUBA.

*To the Editor of the Dental Review:*

SIR:—Your request to furnish the REVIEW with information relating to the condition of dentistry in Cuba has been received, and in replying thereto I desire to divide the subject into two parts, namely, dental legislation and dental societies, treating of the former *only* in this letter, reserving the last subject for a future communication.

The present legislative method has existed since 1881, and its many deficiencies and crudeness, make it impossible to be of any benefit to the profession or to the people. Prior to 1881 there was at least something resembling order, to-day all is chaos. The interpretation placed upon the law, by those in authority, is such that it becomes entirely worthless. It is not enforced with any reasonable amount of justice or respect, being made sufficiently pliable to suit any circumstances. To these lamentable conditions there may be added the existence of unsatisfactory dental colleges and academies, where students receive a poor, imperfect education. These institutions are turned into miserly establishments, run for the pecuniary interest of those interested in them, at the expense of the honor of the profession. The

dentists composing the board of examiners of the island are pecuniarily interested in these schools. It would be unreasonable to expect them to refuse any of their own students to practice, thus exposing their own incapacity as teachers; hence it would be an interesting sight to see the examination papers of many who have passed this august body; persons who are a shame to the profession, and who should never have been permitted to enter its ranks.

In another letter I will explain the methods in vogue for the examination of candidates before practicing dentistry in Cuba.

Yours truly,

FEDERICO POEY.

HAVANA, CUBA, March 25, 1887.

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## REVIEWS AND ABSTRACTS.

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A SYSTEM OF DENTAL SURGERY, by Sir John Tomes, F.R.S. Third edition, revised and enlarged by Charles S. Tomes, M.A., F.R.S., with 292 illustrations, Philadelphia, P. Blakiston, Son & Co., 1887. Chicago, W. T. Keener. Price, cloth, \$5.00.

The new edition of this standard work announced as forthcoming for many months has reached us. A large part of the work is devoted to oral surgery, as distinct from the description of ordinary operations which constitute the great bulk of the work of the average dentist. This subject is ably and exhaustively treated, furnishing the specialist in this department of dentistry with a practical and authoritative guide.

That the portion of the system which concerns the dental practitioner proper, will satisfy the wants of the large conservative body of the profession, is more than probable. That it meets the expectations of another class, the minority, who represent the advance column of growing workers—men that eagerly seize upon the results achieved by investigators in dental and medical science, and who are quick to adopt the changed methods which a better understanding of physiology and pathology dictates, is not so apparent.

The amount of labor and of comprehensive brain power required for the treatment of each and all the subjects embraced in this system is enormous, and that it is so well done by a single mind is remarkable. But a right appreciation of the requirements of a rapidly developing profession demands rigid and impartial criticism of a work which, making no pretension to completeness, is yet the book by which the present condition of dentistry will be judged.

The growth of dentistry during the fourteen years which have elapsed since the last edition was given us by the younger Tomes has rendered necessary much revision and alteration. Some sections are omitted and other new ones added. There are thirty pages of matter and twenty-nine illustrations added to the new edition. The pages and type are larger; making a book, handsomer and more easily read. Terms have been in some degree changed to conform to present good usage, but the words "fang" for "root," and "nerve" for "pulp," "dead" for "pulpless," still mar the pages and dismay those who are striving to secure the adoption of an improved nomenclature.

The section relating to the development of the teeth from the time of their eruption to their complete adult arrangement, is but slightly altered from the second edition and not in any of its essentials. The subject of absorption of the roots of temporary teeth is inadequately treated, for though the primal cause which so capriciously determines the point at which absorption shall begin is unknown, the nature of the absorbent cell and its functions are understood and should have been set forth. Instead, this point is dismissed as being still as vaguely known as when the preceding edition was issued. The various types of irregularities of the teeth in their etiological aspects and their accompanying phenomena are ably and instructively discussed. The treatment recommended is only conventional, however. Torsion or forcibly twisting a tooth in its socket with the forceps would certainly be voted unwarrantable and unsafe practice by modern dentists. The Coffin split plate and the Farrar system are very properly advocated, but it is made very evident that the subject is not being handled by an enthusiast in orthodontia.

The chapter on caries is an exposition of its physical manifestations, and a summary of the different hypotheses which now

prevail as to its nature. It will occur to many that too much space is unprofitably given to the inflammatory or vital theory, when the author finally reaches the conclusion that caries "is due to the solvent action of acids which have been generated by fermentation going on in the mouth." The part taken by the streptococci family is not recognized with positiveness nor dwelt upon with the length and fullness its importance demands. Much light has been thrown on this fascinating subject in the last few years, a synopsis of which should have been incorporated in a work of this character.

In the chapter devoted to the treatment of caries the portion relating to plastics is especially valuable. The treatment recommended for exposed pulp is likewise sound doctrine; a moderate course intermediate between the two extremes of conservative surgery and the relentless use of arsenic is advised.

Regarding pulpless teeth, the American reader will be surprised that a great uncertainty exists in the mind of the English dentist as to the probability of such members remaining free from peridental inflammation. It is constantly cropping out in the text that a pulpless tooth is looked upon with suspicion and misgiving as to its future. Their experience does not seem to warrant the making of a positive and favorable prognosis. Many will see sufficient reason for this lack of confidence in the fact that gold or tin is recommended as the best material for a canal filling.

The book ends with a chapter on the principles and details of a few methods of pivoting teeth, which is capital, considering the small space and few cuts given.

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DENTAL SCIENCE; Questions and Answers, on Dental Materia Medica, Dental Physiology, Dental Pathology and Therapeutics. By Luman C. Ingersoll, A.M., D.D.S., Dean of the Dental Department of the State University of Iowa. pp. 136; interleaved. Keokuk, Iowa, 1886. Price: cloth, \$2.00. Chicago, W. T. Keener.

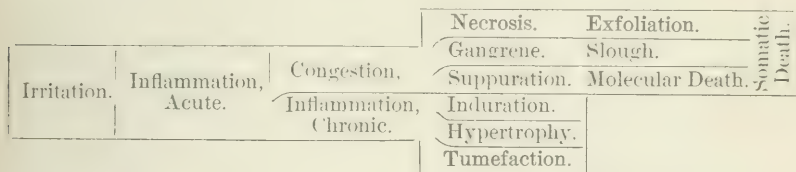
Dr. Ingersoll's work is designed for the student, and the three chapters of which it consists are a compendium of the lectures delivered by him in the dental department of the State



University of Iowa. The blank pages facing each printed page "serve for taking notes of reading or of information derived from other sources, on the same subjects, as are made points of inquiry on the page opposite. Thus the work becomes a **HAND BOOK OF READY REFERENCE** for the office."

The entire work contains about five hundred and seventy-five questions, divided almost equally among the three sections of the volume. The chapter on *Materia Medica* deals mainly with the most common drugs employed by dentists, and their application in practice, though on many points not quite as comprehensive as might be desired, the replies are lucid, and will materially aid the student. Under the head of *Physiology* much space is appropriately devoted to the "Dental Follicle," tooth formation, etc., giving a clear idea of those processes so often very difficult for beginners to understand.

In the third chapter, *Pathology and Therapeutics* are treated from a very practical standpoint, all ordinary lesions of the oral cavity receiving minute attention. The subject of inflammation and the processes pre- and succeeding that state is illustrated by a diagram in this ingenious manner:



Of this the author says: A study of the diagram will make plain the teaching of the text. It is a device of my own to show by a glance of the eye out of what conditions and inflammatory processes any given development of disease has grown. Thus tumefaction, molecular death, or any other new formation or changed condition may be traced back to its source, and all the processes contributing to its formation may be seen at once.

Taking the volume as a whole it is very practical and useful, not only to the student, but the practitioner as well, both, by virtue of its contents and the ready opportunity offered of recording observations and making notes for ready reference.

## PAMPHLETS RECEIVED.

Circulars of Information of the Bureau of Education. No. 2, 1886. Washington: Government Printing Office, 1887.

Ein wirksames Mittel zur Linderung des Schmerzes beim Excaviren. (A useful remedy to allay pain in excavation.) By Wilhelm Herbst, Bremen, Germany.

Die Anwendung der schweren Goldfolie für die Rotationsmethode. (The application of heavy gold foil in the rotation method of filling.) By the same author. Reprints from the *Correspondenz-Blatt für Zahnärzte*.

Transactions of the California State Dental Association at the thirteenth, fourteenth, fifteenth, sixteenth and seventeenth Annual Sessions, held at San Francisco, 1882-1886. San Francisco: Woman's Co-operative Printing Office, 1886.

SOUTHERN ILLINOIS DENTAL SOCIETY—The first annual meeting of the Southern Illinois Dental Society was held at Du Quoin, Ill., on April 12 and 13. An essay on "Local Societies," written by Dr. Garrett Newkirk, of Chicago, was read by the secretary. Dr. R. H. Canine, of East St. Louis, read a paper on the "Care of Nervous Patients While in the Chair"; Dr. G. W. Entsminger, of Carbondale, read a paper on "Root Filling"; Dr. E. M. Cheadle, of Murphysboro, on "Abscessed Teeth," and Dr. T. W. Pritchett, of Whitehall, on the "Results of Filling Teeth and Glass Tubes with Amalgam by the Rotary or Herbst Method." Clinics were given by Dr. W. N. Morrison, of St. Louis, on "Filling Contour Cavities with Platinum—Gold Face"; by Dr. Geo. A. McMillen, of Alton, "Gold Crown"; by Dr. C. R. E. Koch, of Chicago, "Gold and Platinum Fillings"; by Dr. A. D. Penney, of Chester, on the "Use of Electric Apparatus for Painless Dental Operations"; Dr. T. W. Pritchett, of Whitehall, "Amalgam Fillings by Herbst Method," and Dr. Louis Otofey, of Chicago, on "Implantation" and the use of "Perry's Separators." Dr. C. R. E. Koch, of Chicago, delivered an address to the general public, which was well attended and enthusiastically received. The President, Dr. C. B. Rohland, delivered the annual address, which will appear in the next issue of the REVIEW, and which will be reprinted for general distribution among the dentists of Southern Illinois. The society now has a membership of twenty-four active and two honorary, of whom nine active and two honorary members were elected at this meeting. There were twenty dentists in attendance at this session, which was in every respect a successful one, a fact which is very creditable to the dentists of Southern Illinois. The next meeting will be held at Carbondale, Ill., on the second Tuesday in April, 1888. The following are the officers elected to serve for the ensuing term: J. J. Jennelle, Du Quoin, President; R. H. Canine, East St. Louis, Vice-President; G. W. Entsminger, Carbondale, Secretary, and C. C. Corbett, Edwardsville, Treasurer.

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TO THE EDITOR OF THE DENTAL REVIEW :

*Dear Sir* :—I have not found cocaine in any shape or form in which it has been so highly recommended, as useful an obtundent of sensitive dentine as I have desired. Is there anything more recent in that line ?

Yours truly,

NEBRASKA,

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—Last month "C. B." makes inquiry in the REVIEW relative to the treatment of children's pulpless teeth. I can not advise him to do anything that could be more profitable to him, than to address Dr. J. W. Wassall (208 Dearborn avenue, Chicago, Ill.), and get a copy of that admirable little pamphlet "The Management of Pulpless Teeth," just published by the Odontological Society of Chicago.

Respectfully,

JAMES L. D.

TO THE EDITOR OF THE DENTAL REVIEW :

*Dear Sir* :—In reply to a query in the last number of the REVIEW, as to keeping cavities dry near the gingival margin during filling, permit me to say, that, although there are a number of clamps for this purpose on the market, the most satisfactory plan to me is to crowd the cavity, and sometimes the spaces on each side of the tooth, with gutta-percha or cotton and sandrac varnish, repeating the operation until the gum is sufficiently out of the way, to permit the proper adjustment of the rubber dam.

L. D.

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—I am much perplexed over a very stubborn case of chronic alveolar abscess, which I have been treating, or trying to treat, for the past few weeks.

The gentleman afflicted is sixty years of age or more, and is in good general health. The abscess proceeds from the right superior cuspid, and is of long standing. The pulp canal was thoroughly cleansed, and I have been using peroxide of hydrogen, dilute oil of vitriol, iodoform, listerine, dilute carbolic acid, etc., in the root, and also injected into the abscess through the fistulous opening. So far I have not checked the formation of pus, and am getting thoroughly discouraged. If you will be kind enough to give me a few suggestions, as to the proper treatment, and the probability of success, I will be, most gratefully yours,

Elkhorn, Wis.

G.

[If the writer will consult the pamphlet issued by the Odontological Society of Chicago, we think he may find therein a few suggestions applicable to the above case.—Ed.]

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir* :—Very recently a patient aged twenty-two exhibited a first upper bicuspid tooth, with a fistulous opening through the gum, leading from the palatal root.

After opening the pulp chamber the bulbous portion of the pulp was found to be dead, and also that portion occupying the palatal canal: but the pulp tissue in the buccal canal was alive and normal in color, tenacity, and likewise sensitive. Have any other dentists observed a similar case? D. D. S., Chicago.

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TO THE EDITOR OF THE DENTAL REVIEW:

*Sir*:—Will some one describe in the REVIEW the best method of perfuming the rubber dam, and whether it should be done just before using? S.

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## MEMORANDA.

Massachusetts has a new dental law.

Dr. D. J. Pollock has located in Rock Falls, Ill.

Dr. S. H. Guilford is writing a work on Orthodontia.

The Nebraska Dental Society convenes at Hastings, Tuesday, May 17.

The Georgia State Dental Society will meet at Cumberland Island, May 24, 1887.

Dr. J. A. Watling, of Ypsilanti, Mich., sails on May 28 for a three months' trip to Europe.

Repeated applications of powdered tannin to fungoid growths, in roots of teeth will diminish sensibility.

Always use dialysed iron in a cavity after removing arsenic. It is safer to do so, as it is the antidote most conveniently at hand.

A subscription has been opened by *L'Odontologie* to assist in defraying the expenses of a delegate, or delegates, to the International Medical Congress, dental section.

Dr. Thomas B. Wheeler will sail for Europe May 18. He intends locating in Paris, and we commend him to our confrères as in every way worthy of fraternal recognition.

Dr. James W. White, of Philadelphia, editor of the *Cosmos*, has been appointed by Mayor Fitler, of Philadelphia, President of the Board of Charities and Correction in that city.

Fluid extract of tonga in thirty drop doses, every hour, will relieve facial neuralgia. The dose may be doubled without danger until four doses have been taken. It has a taste similar to licorice.

The Kentucky State Dental Association will hold its seventeenth annual meeting at Louisville, Ky., beginning Tuesday, June 7, 1887, and continuing three days. The meeting will be held in the Louisville College of Dentistry.



MISSOURI DENTAL ASSOCIATION—The twenty-third annual meeting of the Missouri State Dental Association will be held at Sweet Springs, Mo., on June 21st, and continue four days.

JOHN G. HARPER, Rec. Sec.

In the law recently passed in Nebraska, no provision is made for a board of examiners. Graduates only are permitted to practice. This is a step in the right direction, but we think there should be a dental board to carry out the provisions of the law.

We notice in the report of the Dental Hospital of London, a gratifying increase in the number of gold fillings inserted during 1886. Gold fillings, 3,094; other fillings, 10,155. In 1887 we hope to see a still larger number of gold operations made.

Dr. E. Parmly Brown, of Flushing, L. I., will spend the month of June in Chicago, giving instruction in bridge work and demonstrating the use of his various specialties to classes of dentists. Dr. Brown is an expert operator, and we hope he will have sufficient support to justify the undertaking.

The dental law of Wisconsin has been so amended that dentists must register annually. A change in the method of prosecuting offenders has been added, so that operations on individual teeth constitute a separate offense. Physicians and surgeons are allowed to extract teeth, without being licensed as dentists.

According to a recent decision of a court at Breslau, Germany, the title of "American Dentist" has been declared not to be an infringement of the titles belonging solely to German dentists. The meeting of the *Deutsche Vereinigung in Amerika graduirter Doctoren der Zahnheilkunde*, was held in Berlin, Germany, on April 10, 11 and 12.

ODONTOLOGICAL SOCIETY OF HAVANA—At a recent meeting of this society the following officers were re-elected to serve during the year 1887: President, Manuel A. Aguilera; Vice-President, Florencio Cancio; Recording Secretary, Ignacio Rojas; Assistant Recording Secretary, Manuel Mediavilla; Corresponding Secretary, Federico Poey; Treasurer, José E. Barrena; Librarian, Rodriguez Eladio.

A purse of \$400 has been forwarded to the English committee of the Waite testimonial fund, which would have been largely increased had it been known that Americans might assist in this undertaking. All dentists on this side of the Atlantic sincerely sympathize with Dr. Waite in the misfortune which has befallen him, (the loss of eyesight). None other could be more distressing to a dentist whose sole capital in practice he is suddenly deprived of.

"TETANINE."—Nicolai, a student in Flüjges laboratory, claims to have discovered the special bacillus or micro-organism causing lockjaw, and Brüger puts forth claims that the disease is also due to the ptomaine "tetanine" produced in certain stages of putrefaction. This is a definite chemical compound which can be isolated by appropriate chemical processes. When injected beneath the skin it will produce a disease developing all the phenomena of lockjaw.

It will be of great benefit to most operators to ligate loose teeth, with gold wire, previous to making the attempt to remove deposits from the roots, or injecting medicines into pockets or between the roots and gums. Twelve, fourteen or six-

teen carat gold wire may be drawn down to the size of ordinary binding wire, and after annealing, it will hold teeth in position by weaving it into figure of 8 shape, around the requisite number. The ends may be twisted and bent towards the gum but not touching it. The wire need not be doubled as it is sufficiently rigid in most cases.

Within the last few years only, has it been possible to obtain exceedingly low temperatures. By evaporating rapidly liquid nitrous oxide with ether in a vacuum a temperature of  $-140^{\circ}$  C. was obtained. Since the classic experiments of Pictet and Cailletet in 1879 on condensing the stable gases and even the air to a liquid, remarkable results in low temperature have been obtained. Thus, M. Wroblewski, by allowing liquid hydrogen to escape and vaporize, has produced a temperature of  $-211^{\circ}$  C., or,  $-350^{\circ}$  F. At this temperature neither gases nor liquid exist, and all matter is solidified.

The following may be of interest to the readers of the REVIEW: *To the Editor of the "British Journal of Dental Science"*: Dear Sir:—As several lists of honorary officers have already appeared in several dental journals—from which one would gather that no representatives from our own country have been appointed—may I be allowed to state that the lists already published, while probably correct enough as far as they go, are entirely unofficial; and that, from reliable private information, I know that due recognition of British representatives of the congress is receiving the attention of the officers and council in America. I am, etc.

GEO. CUNNINGHAM.

Hydronaphthol, the latest antiseptic and disinfectant obtained from the phenol series of coal tar derivatives, is rapidly forging its way to the front in popular estimation. Surgeons and gynecologists everywhere, both in hospital and private practice, accord it the highest praise for all the purposes of an antiseptic and disinfectant. Its freedom from odor, poisonous properties or corrosiveness, gives it preference over carbolic acid and other antiseptics heretofore employed. A book giving full description of hydronaphthol will be sent free to all physicians or dentists applying by postal to Seabury & Johnson, manufacturing chemists, 21 Platt street, New York.

Dr. Mitchell, of London, Eng., says: In making cores for undercuts in cases where models will not draw from the sand, use ordinary flour to the extent of about ten per cent. in bulk with ordinary molding sand, or what is better, marble dust. Mix a sufficient quantity thoroughly, in the dry state, then moisten it a little more than for molding, fill the undercuts and trim to suit; jar out the cores and place in an oven or over gentle heat. When dry they can be handled nicely, replace them and mold as usual, they can then be placed in the mold, when a perfect die will be the result, without any of the annoyance attending the operation incident to cores made in any other way.

The faculty of the Chicago College of Dental Surgery have recently added to the college equipment, a McIntosh combination stereopticon and solar microscope, to aid the lecturers in demonstrations before the students. By means of this instrument, rough diagrams on the blackboard, which convey but a faint idea to the students of what the instructor desires to illustrate, become things of the past, and finished drawings six to twelve feet in diameter are projected upon the screen, or

histological and pathological specimens, can be shown before the whole class in such a manner, as to make the hitherto dry and uninteresting subjects, the most attractive of all the studies. The college is to be congratulated upon the enterprise shown by the purchase of so valuable an adjunct to the lecture room.

At a recent meeting of the Biological Society in Paris, M. Ch. Ozanam read a paper upon the use of carbonic acid gas as an anæsthetic. It has been known for a long time that the gas can be used for this purpose; the author has used it on man with good results. When mixed with air and properly inhaled complete anæsthesia is induced. The effect is apparently devoid of harm and danger and the condition may be continued for a long time. His experiments have been already confirmed. The application of this gas for the purpose is not new and is often regarded as the first agent employed. It has been conjectured that the physicians of ancient Greece and Egypt produced anæsthesia in the same manner, the carbonic acid being evolved by the action of vinegar (acetic acid) on chalk or marble.

**A NEW USE FOR PLASTER OF PARIS.**—A Frenchman named Julhe has discovered, by experimenting with gypsum, that by properly mixing one part of freshly-slaked lime and six parts of gypsum a substance is prepared which works exactly like gypsum. If now this substance be soaked with some sulphate with a base precipitable by lime, it becomes, on standing, extremely hard. Thus if zinc sulphate be used the object remains white; if iron sulphate, it takes a reddish brown. In practice the lime and gypsum are just saturated with water and allowed to dry. On immersion in a saturated solution for about two hours the salt is readily absorbed. This material is being extensively used as a substitute for boards for building purposes with good satisfaction. It weathers well, and when painted with browned linseed oil or copal varnish the results are most striking.

*To the Editor of the "Journal of the British Dental Association"* Dear Sir:—In *The Independent Practitioner* for March, 1887, which is just to hand, we are favored with a list of the officers who are to represent the Section on dental and oral surgery at the forthcoming International Medical Congress, which is to be opened at Washington, D. C., on the 5th of September, 1887. It is a list full of honored names, but an analysis of it has grievously disappointed me. Here is a concise summary: The United States are fitly and abundantly represented; Germany is represented by Drs. Busch, Herbst, Holländer and Parreidt; France by Drs. Andrieu, Brasseur and Magitot; Sweden by Dr. Förberg; GREAT BRITAIN, BY NO ONE! How is this? Is it due to jealousy, or have our American brethren lost sight of our existence? Yours faithfully,

COSMOPOLITAN.

Dr. Louis Ottogy, of Chicago, has within the past six months been practicing the implantation of teeth quite extensively. On the 24th of April an invitation was extended to a number of dentists in the city to call at his office and inspect the operations. Three patients responded for examination. The operation had been performed but recently on two of the subjects, and the evidences of success were very promising. The third patient had two teeth implanted (a bicuspid and cuspid on the right upper jaw), both of which were doing duty harmoniously in their new home. In this case it required more than a glance to detect which were the implanted teeth, so closely did they resemble their neighbors. The tissues sur-

rounding the teeth were in their normal condition, and the bicuspid especially was as firm as any of the adjoining teeth. The sockets were made by using Walker's trephines.

R <sub>x</sub> Acid Carbolic. (crystals)	-	-	-	gr. xxx
Alcohol, 95 per cent.	-	-	-	m. xxx
Eucalyptol	-	-	-	m. xv
Tereben	-	-	-	m. xv
Ol. Gaultheria	-	-	-	m. xv
Gum camphor	-	-	-	gr. xv

#### Misce.

Use in full strength to paint turgid gums. Inject through fistulous abscesses, also into pyorrhœa pockets without dilution. If one ounce each of alcohol and glycerine be added to the above it may be diluted with water up to sixteen ounces and used as a mouth wash. This is an example of polypharmacy, but it is good nevertheless.

The fact that the india-rubber industry is suffering severely at present may become of importance to dentists who use large quantities of it. It is evident that unless the trees and the industry is better protected, not only will the supply be greatly diminished, but it may be entirely obliterated. Not many years ago more than 100,000 pounds of it were shipped every month from Graytown alone, but at present the average export per month is only about 62,000 pounds. This considerable falling off is due to the fact that no legal or other surveillance is exercised over the gathering of the gum, and with the customary improvidence of these people many of the valuable trees which yield it have been ruined. The Yularoes or rubber-hunters are the most ignorant and irresponsible creatures, whose first object when out in a hunt is to secure as much caoutchouc as possible, and next to damage the prospects of other Yularoes, regardless of the future.

"A clever young fellow, a student at law,  
 Had an indolent swelling come under his jaw .  
 He took many drugs, still larger it grew,  
 Till it covered the jaw and the clavicle too,  
 And though it received every care and attention,  
 It much interfered with the act of prehension.  
 The pain was so great that the man became furious,  
 But relief came at last, when c. m. Mercurius  
 Arrested the sweating and slacken'd the thirst,  
 Then softened the swelling, which very soon burst;  
 But instead of 'the corn,' oh, strange to behold,  
 The tumor discharged quite a lump of pure gold,  
 Which the dentist had dropped in the gum, while essaying  
 To plug up a molar, long since decaying.  
 This morsel of gold, like an amœboid cell,  
 Worked its way to the surface; how, no one could tell,  
 But it shows how Dame Nature may sometimes grow bold.  
 Like most other women, and throw away gold.  
 The patient's delight can't be told in this stanza,  
 For he fancied his jaw had become a bonanza."



## IMPORTANT NOTICE.

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CHICAGO, May 7, 1887.

*To the Editor of the Dental Review :*

*Dear Sir :* The inclosed communication is one of such interest to the profession, who have been led to believe that the annual meeting of the American Dental Association would be postponed till next year, that its early publication seems to be called for.

Respectfully,

GEO. H. CUSHING,  
Recording Secretary.

CHICAGO, ILL., May 6, 1887.

DR. GEO. H. CUSHING, *Recording Secretary American Dental Association :*

*Dear Sir :* Your letter of April 30th, accompanied with a copy of a communication from Drs. W. C. Barrett and Frank Abbott, making a protest against a proposed action of the officers of the Association, looking to the postponement of the regular annual meeting of the American Dental Association of the present year until 1888, and raising what they term a "point of order" as to the power of the officers under the constitution to do so; also your letter of a more recent date, with a statement of the vote upon the question submitted to the officers of the Association, is received.

As the question raised had not occurred to me before, and the existing circumstances are of more than ordinary importance, I have thought it best to take such time to consider the subject as would enable me to reach a correct conclusion as to the power of the officers to change the time and place of the Association's annual meeting; hence the delay in my reply.

It should be noticed that the gentlemen do not question the power of the officers to change the time and place of the meeting, provided the time is fixed within the year 1887.

The authority that the officers have (if such authority exists) to postpone the next annual meeting to 1888, is found in Section two (2) of Article four (4) of the Constitution. So much of the article as in any way governs the question, and to which reference is made by the protestants, reads as follows: "TIME OF MEETINGS.—The regular meetings of the Association shall be held annually, and commence on the first Tuesday in August. The place of meeting shall be determined each year by vote of the Association.

"Sec. 2. The officers may, for extraordinary reasons, change the time and place of meeting upon the written consent of ten (10) of the fifteen (15) officers."

As Drs. Barrett and Abbott are not officers of the Association, and have no right to vote upon the question at issue, or upon an appeal from any decision made, I could not see clearly how they could raise a point of order. The question, it seemed to me (for the time being at least), was a matter that rested entirely with the officers of the Association.

The point they raised is valuable, however, as it has suggested a more thoughtful consideration of the question as to whether the officers have the power to *omit* a regular annual meeting of the Association, for if the regular meeting for this year is postponed until 1888, the meeting of 1887, or that of 1888, would, of necessity, have to be omitted.

Upon a careful reading of the Article referred to, I became satisfied that an honest construction of its meaning forbade the officers postponing the meeting until next year. But before giving this as my decision, I felt that I should take counsel with some one in whose opinion the Association could rest with assured confidence.

With this idea in view, I placed the Constitution of the Association, and the protests of Drs. Barrett and Abbott in the hands of ex-United States Senator, Lyman Trumbull, and asked him to give me his written opinion upon the entire subject, which will be found in the following copy of a letter received from him:

CHICAGO, May 4, 1887.

*Dr. W. W. Allport, President American Dental Association,*

*Argyle Building, City.*

*Dear Sir:*—The authority of the officers of the American Dental Association to dispense with the annual meeting is one of power under the constitution, and not a question of order as to the course of proceeding, which could only be raised by a member of the association in one of its meetings.

In my opinion a fair construction of Article 4 of the Association's constitution requires regular meetings of the association to be held annually. While Section 2 of that Article authorizes the officers, for extraordinary reasons, to change the time and place of meeting upon the written consent of ten of the fifteen officers, I do not think it contemplated a repeal of the first section which requires annual meetings to be held; but was intended rather to authorize a change of the time and place of holding the annual meeting. My conclusion is that the officers would not be authorized under the constitution, to dispense altogether with the annual meeting.

Yours truly,

LYMAN TRUMBULL.

With the opinion of a gentleman of such large experience in, and accurate knowledge of, parliamentary proceedings, and acknowledged standing as an able constitutional lawyer, I must accept his interpretation, and decide that the officers of the Association have no power to *omit* an annual meeting, and therefore direct that the vote just taken be not recorded.

Very truly yours,

W. W. ALLPORT, President.



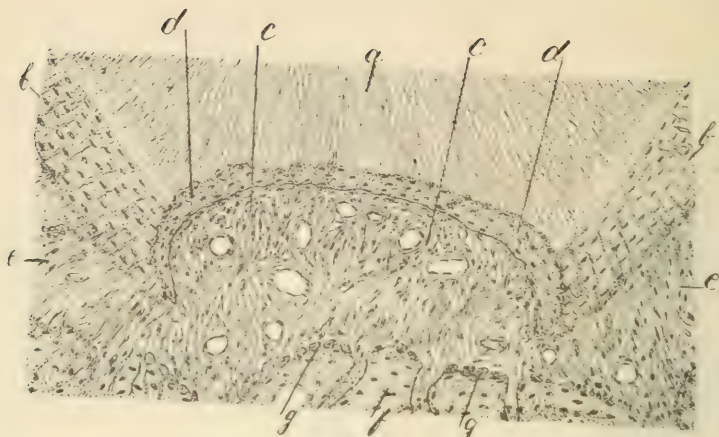


Fig. 62

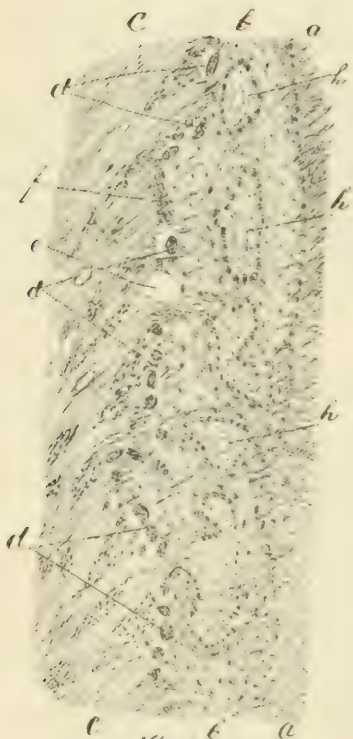


Fig. 63

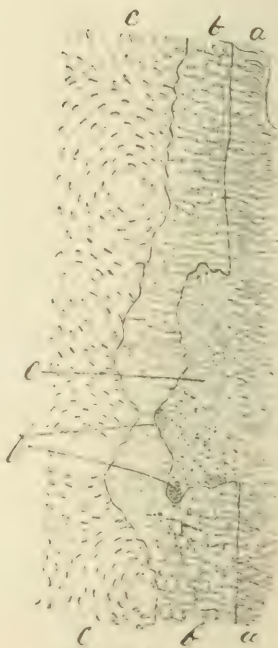


Fig. 64



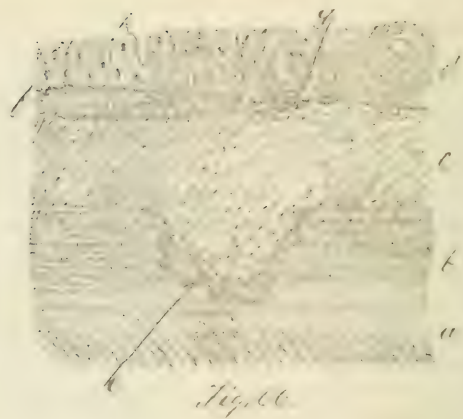
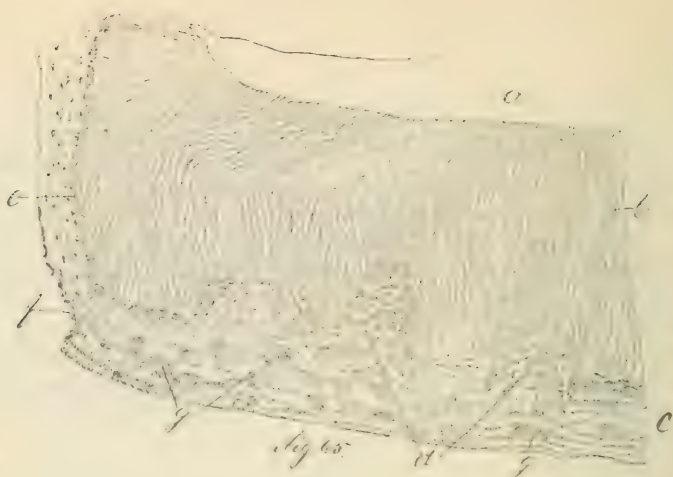
# DESCRIPTION OF ILLUSTRATIONS.

Fig. 62, 1-2 in. obj. Cross section of the root of temporary incisor tooth of the pig, showing a large area of absorption which is partly filled in with cementum.

*a, a*, Dentine. *b, b*, Cementum. *c, c*, Area of absorption. It will be noticed that in this area all of the cementum and a considerable portion of the dentine has been removed. *d, d*, Cementum that has been laid down upon the surface of the dentine and cementum alike. *e, e*, Peridental membrane. *f*, Portion of bone forming the wall of the alveolus that has grown forward into the area of absorption. *g, g*, Osteoclasts which are removing these bony projections. The bone which has been advanced here to take the place of the absorbed area is being removed again in compliance with the rebuilding of the cementum, which is in progress.

Fig. 63, 1-2 in. obj. Portion of the anterior alveolar wall of an incisor that is being absorbed. *a, a*, Portion of the inner layer of the periosteum. *b, b*, Bone forming a portion of the anterior wall of the alveolus. It will be observed that it contains a number of Haversian canals, *h, h*. *c, c*, A portion of the peridental membrane. *d, d, d*, Osteoclasts which are in the act of removing the bone, thus the widening of the alveolus. *e*, Space from which a large osteoclast has probably fallen during the preparations of the section. It will be noticed that where the osteoclasts are removing the bone, the fibers of the peridental membrane are detached and some little space is occupied by tissue of a fetal type, but in the spaces between the groups of osteoclasts the fibers are firmly attached to the bone. At *f*, there seems to be a little new bone formed to which fibers are attached. In this way bone seems to be removed, part by part, and the attachment of the membrane maintained.

Fig. 64, 1-2 in. obj. Portion of the alveolar wall of a cuspid tooth of an old person, showing absorptions. *a, a*, Portion of the peridental membrane. *b, b*, Portion of bone that seems to have been built on to supply an area of previous absorption. *c*, A recent absorption area. At *f*, three osteoclasts are seen. It will be noted that the fibers of the peridental membrane are detached throughout this area of absorption and the space is occupied by tissue of a fetal type. It should also be noted that the Haversian systems of the bone had been cut into by the previous absorption, removing portions of the rings of the Haversian systems. Residual fibers are seen in the bone *b*, but there are none in the Haversian bone *c*.



# DESCRIPTION OF ILLUSTRATIONS.

Fig. 65, 1-2 in. obj. One half of the apex of the root of a lower molar. From a dry section. *a*, Pulp canal. *b*, Dentine. *c*, Cementum. A number of absorptions have occurred at *d*. Absorptions have proceeded from the second lamella of the cementum and have penetrated the dentine to a considerable depth. These have been refilled with a somewhat irregular deposit of cementum. Along the line *e*, a very considerable absorption has cut away the entire apex of the root, removing not only the cementum, but evidently a considerable portion of the dentine as well. From the appearance of the incremental lines, this seems to have occurred contemporaneously with those pointed out at *d*. The exposed dentine has been again covered with cementum, which is fairly regular, though its incremental lines are not clear. *f*, An absorption that seems to have been in progress at the time of extraction.

Fig. 66, 1-2 in. obj. From a section of a bicuspid with its alveolus, showing a pit-like absorption upon the side of the root in which the redeposit of the cementum has begun. *a*, Dentine. *b*, Cementum. *c*, Peridental membrane. *d*, Bone forming the wall of the alveolus. *e*, Absorbed area of cementum. It will be noticed that a new deposit of cementum has begun the filling of the area, and that the soft tissue in the area of absorption is of a cellular type. The bone also shows the effects of absorption in the cutting away of portions of the rings of the Haversian systems at *f*, while at *g* the presence of osteoclasts shows that absorption is in progress at the point.

Fig. 67, 1-2 in. obj. Cross section of the immediate apex of the root of a cuspid tooth, showing large areas of absorption. *a*, Root canal. *b*, *c*, *i*, and *j* show extensive absorption areas that have been refilled with cementum, while *e*, *d*, *h*, and *k* show smaller absorption areas than have occurred later. Some of these areas show the included fibers of the peridental membrane plainly, while others do not, probably for the reason that the section is not parallel with them. At *f*, the original or regular deposit of cementum reaches the present surface. The plane of the section is not such as to show the incremental lines, and therefore the relation of the absorptions to these cannot be seen.





# THE DENTAL REVIEW.

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## ORIGINAL COMMUNICATIONS.

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### THE PERIOSTEUM AND PERIDENTAL MEMBRANE.

BY G. V. BLACK, M.D., D.D.S.,

Professor of Pathology in the Chicago College of Dental Surgery.

*(Continued from Page 365.)*

#### ABSORPTIONS OCCURRING IN THE ALVEOLUS.

The absorptions occurring in the alveolus are of much interest and practical importance to the practitioner. They are very frequent, occur under various conditions and circumstances, and may be of any extent, from the slightest erosion of the surface of the root of the tooth, or of its alveolar wall, to the complete removal of either or both together. It is by absorption that the roots of the temporary or milk teeth are removed to give place to the permanent or adult teeth. And so far as microscopic study of the subject can determine, it is by precisely the same plan that the roots of permanent teeth are occasionally absorbed, either in part or completely. So far as has as yet been determined, it is this same process of absorption that is the great enemy with which we have to contend, in the various operations of replanting, transplanting and implanting natural teeth.

The subject of the absorption of the roots of the temporary teeth does not properly come within the scope of this work, except incidentally for comparison with other absorptions. A study of the physiological errors that occur in the absorption of the roots of the temporary teeth, will do much to explain some things that seem very strange in the absorptions which occur in

the alveoli of the adult teeth. By physiological errors, I mean, as has previously been said, an action of the tissues which is purely physiological in form, but going beyond the needs of the time and perhaps calling for a counteraction on the part of the adjacent tissues for its correction; but not going to an extent that can properly be classed as pathological. In the consideration of the soft tissues such errors are not readily detected, because all trace of them is soon effaced; but in the study of the bones, and especially of the teeth, where these errors remain written indelibly in the structure in which they have occurred, possibly many years before, we may, after sufficient observation, trace their progress and subsequent correction with almost the same certainty that we can trace a well-worn pathway through the wooded hills.

The process of absorption has been spoken of, its peculiar cells illustrated and described, and its effects upon the hard tissues detailed, in the previous pages. It is generally performed, we may say always, when any considerable mass of hard tissue is to be slowly removed, by the specialized cells known as osteoclasts. How these cells perform this function is not yet perfectly clear. It seems that they elaborate and evolve from themselves a substance which dissolves the hard tissues with which they may be in contact. Some observers, as Krause, regard this substance as being lactic acid, while many others seem unwilling to express an opinion. The action upon the hard tissue is certainly different from that of lactic acid, in that there is very little softening of tissue upon which it acts farther than the portion actually liquefied and removed. The surface, being absorbed, is thrown into elevations and depressions by the form of the cells acting upon it, but the surface of each of these depressions will be found to be clean, smooth and hard, and when dried will glisten like a polished surface. The osteoclasts are not attached to the surface of the bone or tooth by any mechanical means whatever; they simply lie against the surface and are detached with the least movement. They only act, however, when lying in contact with the surface. Any intervening substance whatever will prevent their action. Therefore, the formation of an abscess with pus lying about the end of the root of a temporary tooth, so long as it lasts, is a bar to the absorptive process. This

may act in two ways. 1st. The presence of the pus may separate the cells from the tooth's root. 2d. The pathological condition may prevent the physiological action of the cells. The process of absorption is always to be regarded as physiological, but the error of direction and extent may be so great as to constitute a pathological condition, as when the root of a permanent tooth is wholly, or in a great part, removed by this process.

The tissue acted upon in absorption is always passive. On this point there seems to have been a difference of opinion, some writers supposing that the absorption of bone was performed in part by the bone corpuscles. There may be some forms of disease of the bones in which this is the case, as claimed by Cornil and Ranvier; but certainly there is no such thing in the physiological absorptions. The root of a tooth that has lost its pulp, and consequently the vitality of its dentine, will be absorbed as readily and as completely as the living tissue, provided always that the tissues in contact with the root be in a physiological condition. I have frequently noted the absorption of the root of a temporary tooth after the healing of alveolar abscess; but, if the abscess continues, the absorption will generally fail in part or entirely. For the performance of absorption, then, it is required that the physiological action of the cells be not seriously impaired. At the same time, the clinical history of cases seems to show that a moderate degree of irritation or inflammatory action may hasten, or even be the condition of the beginning of many of the absorptions. It is not yet clearly made out that the absorption of bone in conditions of inflammation is always the same process as that which occurs physiologically, but I will say that in all the absorptions within the alveolus which I have yet examined, the process has been identical with the physiological removal of the roots of the temporary teeth; but is manifested in directions and in forms that are often erratic in the extreme.

I have examined very closely the condition of the bone corpuscles in the immediate neighborhood of areas of absorption in various regions and conditions, and have never seen any evidence whatever that they took part in the process. I have, in a number of instances, found the bone corpuscle uncovered by absorption and their processes removed up to the body of the cell, and yet no change could be discovered in the condition of the cell itself.

There is certainly no enlargement of the chamber in which it lies. It seems to be entirely passive. Precisely the same is true of the cement corpuscles. The dentine is also removed, and the dental fibers cut away without the least change occurring, either in the remaining parts of the fibrils, or the dentine of the neighborhood.

All of this illustrates the fact that these tissues when once formed become passive agents. Not that all of their parts have become inert material devoid of life, but they are for the most part composed of formed material, in which physiological activity is reduced to a minimum.

Many of the irregular phases of the absorptive process might be illustrated by the examination of the roots of the temporary teeth. Perhaps very few of these are regularly removed proceeding from the apex of the root to the crown. Indeed, the more common form is for the absorption to begin some distance down on the side of the root, cutting a deep cleft. Then it will begin at some other point and do the same thing, and at another, and so on. These will finally merge into a great gap in the substance of the root, and the process will perhaps proceed more rapidly in the destruction of the remaining portion. We have no evidence that during this time the absorptive process produces any inconvenience to the young animal, or the child. It is not until the tooth is materially loosened by the loss of its root that inconvenience is felt. But during the earlier part of this process it seems to proceed with much uncertainty and indecision (if such terms are admissible), for we find many instances in which the absorption has proceeded for a time and then ceased—not only ceased, but the work of repairing the breach has been undertaken by the building in of new cementum.

I offer an illustration of such a case, taken from the temporary tooth of a pig, in fig. 62. In this case a large breach extending far into the dentine had been made in the side of the root, nearly midway its length, by absorption, and at *f* the bone had grown forward toward the absorbed area. Now a change occurred. Cementum is again deposited for the repair of the breach, and this is laid down over the cut ends of the dentinal canals, upon the dentine, covering it over smoothly and evenly in this case, though it is not always done so regularly. It will be noted that the gap



in the dentine is not repaired by a new formation of dentine. Such gaps are always repaired by cementum, if repaired at all. In many cases there is a much greater deposit of cementum of repair than in this, but this one is sufficient to show that cementum may be laid down upon the dentine denuded of its cementum, which is a point of no mean importance in these days of the study of the various forms of replantation, and of the amputation of roots of teeth. Fig. 65 illustrates the same thing as occurring upon the root of a permanent molar.

Passing now to the permanent teeth, I will first notice the absorptions occurring in the alveolar wall. These are very numerous, and may be studied by preparing sections of any of the teeth of the adult; but the best studies will be had from the alveoli of teeth that are at the time undergoing change of position from any cause, such as the loss of a neighboring tooth, continued pressure, or the incisors (and I suppose the molars also) during that change of position which occurs during the lengthening of the face, which was illustrated and described in the April number. Under any of these circumstances changes in the alveolus and the attachment in the principal fibers of the peridental membrane occur, and these seem to call for absorption and rebuilding of bone. In fig. 63 I present an illustration of this, taken from the middle portion of the anterior wall of an incisor. The upper portion of the illustration is toward the crown of the tooth. This illustration shows especially well the method by which the fibers of the peridental membrane become detached and reattached during movements of the tooth in its alveolus. No very considerable absorption areas are seen, but groups of osteoclasts appear at very frequent intervals, as shown at *d, d, d*, which lie in the lacunæ of Howship, absorbed into the surface of the bone. At all such points the fibers are detached. Indeed, these fibers seem to disappear with the appearance of the osteoclasts, but wherever the bone is not covered by these cells the fibers are found to be in position. At *f* it will be noted that a portion of new bone has been built on to the old, in which the ends of the fibers are secured. In this way, it seems, absorptions and changes in the alveolus may occur slowly, or even with considerable rapidity, and sufficient attachment of the principal fibers of the membrane be maintained to hold the tooth securely while its position is being

changed. Parts of the fibers are cut away and some portions of the bone removed, then the fibers are reformed and built into the wall of the alveolus by a new deposit of bone about their ends. These changes are not confined to young animals, or young persons, but may be found in progress in the old as well, but are generally more irregular. I have not had the opportunity of examining a case in which the artificial movement of the teeth, as in the correction of irregularities, has been made, but from what I have seen I suppose that the absorption and rebuilding occurs in precisely the same way. However, in the rapid movements that are often made in these cases, there must be a solid line of absorption along one portion of the alveolus (that pressed against) detaching the fibers *en masse*, while the fibers on the other side are lengthened. Hence, the tendency of the tooth to return to its old position until time enough has elapsed for a sufficient reformation of its alveolus and the reattachment of its fibers.

In adults evidences of changes in the alveolar wall may be found about almost any tooth (so far as my observation has extended) that has changed position from the loss of neighboring teeth. In fig. 64 I present an illustration from the alveolar wall at the posterior surface of a bicuspid that had moved backward slightly from the crown of the second bicuspid. The bone, *b, b*, seems to have been built in to supply an area of absorption that was considerably more than the needs of the actual movement of the root. That this has been an absorption is clearly shown by the Haversian systems of the bone being cut into and portions of their rings removed, as is shown all along the line. At *e*, a recent absorption has occurred, and from the presence of three osteoclasts (*f*) it is seen to have been in actual progress at the time of the death of the individual. Such absorptions as this latter are not infrequent in the alveolar walls. They seem to occur without any cause that I have been able to trace, though it is probable that they are stimulated by some slight movement of the tooth, and have proceeded beyond the needs, and are again refilled by the deposit of bone.

In a large number of examinations very many spaces will be found at which there seems to be no attachment of the membrane to the bone, and yet the appearance of residual fibers within the bone shows plainly that the fibers have previously been attached

here. In these cases there is sometimes evidence of absorption of the surface of the bone, sometimes not, but it seems most probable that the fibers have been removed by this process, though this may occur from some process not yet noted. Precisely the same thing occurs along the surface of the cementum, sometimes evidently from absorption of the surface of the cementum, but sometimes such absorptions cannot be demonstrated. Absorptions of the cementum are not so frequent as those of the alveolus.

In fig. 65 I present an illustration exhibiting the evidences of absorption of portions of the root of a lower molar. In absorptions of the cementum in cases in which it has not been so great as to obliterate the lamellæ we may do much in the way of fixing the time of the occurrence relatively to the laying down of the individual lamellæ, in the same way that we can fix the relative time of the formation of hypertrophies of the cementum described in the May number. These absorptions are found to have broken through certain of the lamellæ and extended, perhaps as those shown at *d*, fig. 65, considerably into the dentine. They are afterward repaired by the deposit of cementum, and the lamellæ of cementum subsequently laid down are seen to pass over them without material disturbance. In all such cases we know that the absorption has occurred very early in the history of the tooth, otherwise it would have broken through the lamellæ deposited later. In the study of the subject we will find these beginning with any of the lamellæ of the cementum, from first to last, as the absorption has occurred early or late in life. In fig. 66 a pit-like absorption has extended from the surface through all of the lamellæ of the cementum except the first, almost reaching the dentine. This was from an old man, and was evidently very recent, for the process of repair seems just begun and is apparently in active progress.

The greater number of absorptions that I have studied seem to have begun in the second or third distinct lamellæ, and have probably been contemporaneous with the first use of the tooth, at a time when it is forced a little to this side or that for the fitting of its cusps into the sulci of the opposing tooth. At *e*, in fig. 65, an absorption of much greater extent is shown. This seems to have cut away the entire apex of the root. Absorptions as extensive as this are much more rare than those previously noted,



but close observation of teeth extracted will within a few years reveal a goodly number of such. They are found in teeth that seem to have rather short, thick roots, often with an irregular surface. Sometimes these will be found upon microscopic examination to be recent absorptions in which the dentine is exposed. Again, they will be found covered with a fresh deposit of cementum. In the greater number of cases a close study of the lamellæ of the cementum will give a clue to the time of the absorption. For this purpose it is necessary that the section be carried directly at right angles with the lamellæ, for otherwise they will not appear distinctly. It is therefore practically impossible to study every part of a root. But generally enough sections can be had from lengthwise cuts to give a good idea of it.

In fig. 65 a study of the lamellæ of the cementum shows that the absorption which shortened the root at *e* occurred early in the history of the tooth, and that it was promptly recovered with cementum. The incremental lines do not appear very plainly in this part, but they lead into it in such a way as to leave no doubt. In other cases that I have examined, that were outwardly similar, and which might be illustrated, the absorptions have occurred late in the tooth's history, the absorption having broken through the greater number of the lamellæ, or have been recent, as the absorption at *f*, fig. 65, in which there seems to have been no effort at repair.

From the examinations that I have made I am led to the opinion that absorptions of this nature in the roots of the permanent teeth do not remain long without the occurrence of the reparative effort, if the tissues are in a condition for this effort to be made. It may also be stated that, if the tissues are in a condition to produce absorption, they will also be in a condition to make the repair, provided no impairment has occurred in the meantime. Fig. 66, from a section cut from the immediate apex of the root of a cuspid, shows something of the extent and completeness of these repairs.

A class of absorptions precisely similar to that illustrated in fig. 66, is of rather frequent occurrence near the gingival margin of the cementum. I have called attention to these heretofore, and at various times, in the consideration of caries of the teeth, and especially in the appendix to "Formation of Poisons by



Micro-organisms," page 168, and in the "American System of Dentistry," vol. I, p. 777. These absorptions are very generally of the form of that illustrated in fig. 66, and when they occur very close to the attachment of the membrane at the gingival border, are liable to become uncovered by the shrinkage of the soft tissues and afford lodgement for micro-organisms, and thus are a predisposing cause of caries. I have often noted quite broad absorption areas at this point which seem to remove that portion of the cementum which laps upon the enamel, producing a marked groove. This is occasionally more extended, cutting considerably into the dentine, and in case it becomes exposed, gives the opportunity for the girdling of the tooth, in whole or in part, by caries becoming implanted in it. I have seen several instances in which the tooth was almost severed from its root by these cervical absorptions. One lower molar in my possession had an absorption beginning upon the mesial surface, that invaded the pulp cavity. In another case now under observation such an absorption so weakened a lower incisor that the crown broke away. A number of similar cases might be mentioned. These might be mistaken for caries, if the condition of the surface, and the tissues filling the space, were not carefully observed. But the condition is so different in the two cases that a mistake should not occur. Of course, after caries has once invaded the part, there is no means of knowing whether an absorption began the breach or not.

From the studies previously cited it seems that the detachment and reattachment of the peridental membrane in parts here and there is continually occurring. Not only is this the case where there has been appreciable absorption of the cementum, as in the cases illustrated, but a study of the fibers included in the cementum shows unmistakably that they have been broken at many of the incremental lines when absorption cannot be demonstrated. In these cases the constant reappearance of the fibers in the lamellæ subsequently deposited shows that the plan of the reattachment is by new deposits of cementum upon the old. In this new deposit the ends of the fibers are imbedded, making a firm hold. This occurs equally well if the new deposit be upon the denuded dentine, as when it is upon the cementum. This being the constant method in this class of cases, I

must now suppose that in the various modes of planting natural teeth, the manner of attachment to the root is the same. That is to say, the attachment of the tooth depends upon the production of a lamella of cementum covering the root. This lamella of cementum is laid down upon the root by the tissues in contact with it. It does not seem to depend upon the vitality of the cementum upon which it is deposited. It does not grow from the cementum, but from the soft tissues, from the cemento-blasts. If this lamella of cementum is once perfectly formed, there would appear to be no reason why it should not endure, but the apparent difficulty is to obtain that perfect lamella of cementum; and the absorptions continue little by little, proceeding from the many imperfect points, until the root is destroyed. This appears from studies now made. Future investigations may reveal new factors not yet noted.

I have now finished the task I set myself to perform—a practical histological study of the periosteum and peridental membrane. The task has been difficult in many respects, and has required an amount of labor much greater than was expected in the beginning. Although I had such available material, I have thought it best to make new preparations of all of the tissues. These have all been gathered, and the work done since the first of October of last year. As the work progressed it was found that a number of series of sections were required for study in special directions, which greatly increased the labor. All of the illustrations are made from freshly prepared material. The work is now before the profession, and by the profession its value must be judged. Many phases of the subject are new. Very few studies of these tissues had been made by previous observers. Therefore, extended references do not seem to be called for. Indeed, the literature does not furnish them. Hypertrophies and absorptions of the cementum have been studied by John Tomes, Chas. Tomes, C. Wedl, Salter and others, and among these some very brief examinations of the peridental membrane appear. Among the works on general histology there are some brief mention of the characters of the periosteum and peridental membrane, and several have mentioned the presence of residual fibers (fibers of Sharpey) in the cementum. Such notices have, however, been too sparse to give much information on the subject.

However, after studying these papers, the reader will do well to review any and all of these that may be within his reach.

JACKSONVILLE, April 23d, 1887.

THE END.

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### PRESIDENT'S ADDRESS.

DELIVERED BEFORE THE SOUTHERN ILLINOIS DENTAL SOCIETY BY DR. C. B. ROHLAND.

DU QUOIN, ILL., APRIL 12, 1887.

*Gentlemen:*—On the 23d of November last sixteen dentists met at East St. Louis, in answer to a circular issued by a committee of the Illinois State Dental Society, and organized “The Southern Illinois Dental Society.” This movement originated with members of the State Society, who recognized the advisability of more thorough local organization among the dentists of the State. Out of over nine hundred licensed practitioners but a small proportion were identified with dental organizations. Outside of Chicago, there was but one local society—the Central Illinois—the rest of the State being practically unorganized. This condition of affairs was noticed at various meetings of the society, and finally crystallized into the movement spoken of above. As a result, four additional local societies have been formed, viz: the Northern, Southern, Eastern, and Western. All of them, I am told, starting out under exceptionally favorable auspices. While the State Society inaugurated the movement, it especially desired to be understood as occupying towards these societies an attitude simply of encouragement and sympathy. Each society was to be formed independently, and was to make such rules and regulations for the conduct of its own affairs as it saw fit. At the same time, it hoped by means of these local societies, many dentists would be awakened to the benefits to be derived from society meetings, and it would thereby receive accessions to its own membership.

The Southern Illinois Dental Society occupies a field which so far has been almost entirely uncultivated. All that part of the State lying south of and including the following tier of counties, viz: Greene, Jersey, Macoupin, Montgomery, Fayette, Effingham, Jasper, and Crawford, is recognized as belonging to



her jurisdiction. Out of nearly one hundred and fifty dentists practicing within this territory, it is safe to say not many, if any, over ten per cent have been identified with dental societies. When we look at the history of our profession, and consider how much of its present standing is due to the impetus of associated effort, it may be readily seen how great the need and what a noble work lies before us. It is not that we have not had the material within our borders capable of being organized into able and efficient workers, or that the sentiment has not been favorably inclined, but these one hundred and fifty practitioners are scattered over a wide extent of territory and the stimulus of personal contact and acquaintance was wanting. It has been said that nothing can live and flourish unless it exists in answer to some need. From this point of view the Southern Illinois Dental Society may well claim the right to exist, and may with certainty look forward to a future of usefulness and prosperity.

It may be well to consider briefly, at the threshold of our entrance into the sisterhood of dental societies, the purposes of our organization and some of the means best adapted to promote success. In the now historic language of the distinguished Texan, our first query shall be: "What are we here for?" The preamble adopted at East St. Louis answers that well: "The objects for which this society is organized shall be the mutual improvement of its members in the science and art of dentistry, and the cultivation of those practices and principles which belong to professional life." The objects here are declared to be two-fold, the one being intended to promote skill and knowledge, the other to elevate the moral tone of its members—both of equal importance.

In the first place, we meet for the purpose of bringing together here the results of our study and experience. By comparison of notes, and discussions, we aim to eliminate blindness and empiricism from our practice. We mean to study both the art and science of dentistry. We not only want to know the best methods, but also their reasons; not only "how" but also "why." Empiricism, it is true, is oftentimes successful. We frequently stumble upon means and measures, the practice of which brings success, but unless we understand their underlying principles our practice is not scientific, and these isolated facts can



not bring with them their full measure of usefulness. There is necessity for continual study and effort after entering the profession, even to keep up with the procession. The dental college and the previous years of pupilage are very necessary preliminaries. But he who afterwards drops his studies will be left behind. There is no such thing as professional stasis. We either grow professionally or we decay. To do the former requires constant work and study; to do the latter we need only allow ourselves to drift with the tide. We may imagine as we drift by objects along the shore in our little shell that we are moving along very fast, while the boat with the bulk of the profession has long ago steamed out of sight and left us hopelessly in the rear. To encourage us in our work and study, and help us keep up, we are here associated. Our society is our dental college, where we continue our post-graduate studies—in which we are all pupils, in which we are all professors.

In the second place, we meet for the purpose of cultivating “those practices and principles which belong to professional life.”

Dentistry in its two-fold aspect of a mechanical art and a profession, exacts from its members the duties and requirements of professional character. The merchant, mechanic and tradesman conduct their business on principles which competition and rivalry have made common practice, and which public opinion considers perfectly legitimate. These practices are not always based on a code of strict morality, but spring from the most selfish of motives. The professions, on the other hand, have always occupied a higher plane, and formulated for themselves rules of conduct, more nearly in accord with the requirements of the Golden Rule. He who violates these, is considered to have degraded his calling, and this same public opinion sustains this view. Nor is any one justified in considering this a mere Pecksniffian assumption of superior morality. The relations of the professions to individual, family and social life, are such as to demand a higher code of ethics than prevails in the business world, where, to be on the alert, to take advantage of one's neighbor—in a legitimate way, of course—is considered “business.” No one will deny, that if the principles and practices endorsed by the professions, governed all the guilds and trades, the world would

be all the better for it. Hence the dentist who wishes to elevate himself and his profession in the estimation of the public, will cultivate not only his skill and knowledge, but his professional character as well. If he conducts his business according to the practices prevailing among merchants and tradesmen, he lowers his calling to that of a mere trade, voluntarily yields all claims to a professional position, and the public will accept him for what he advertises himself,—a mere “tooth-carpenter.” Hence, we are here banded together to mutually sustain each other in taking the higher view of our calling, and practice towards each other and the public, those virtues which pertain to professional life. These are some of the objects of our organization—objects noble enough, surely, to command the hearty support of each and every one of us.

Dental societies have been a potent factor in promoting that good will and courtesy and the willingness to help each other which distinguishes our profession so largely. It is not so many years ago, relatively in our life as a profession, that what learning and wisdom there was, was hidden behind closed office and laboratory doors,—a strict system of non-intercourse prevailed, and professional jealousy and selfishness hung like a pall over the dental world, to the hindrance of all progress and growth. As dental societies increased in strength and numbers, and dentists came to know and appreciate each other better, this malarial atmosphere disappeared. The amenities of professional life took the place of suspicion and distrust. It was found that a man could be a gentleman toward his professional brethren as well as toward his patrons. It was found that to lend a helping hand to one's neighbor, did not imply putting a weapon into a rival's hand, but that on the contrary, the rival became a friend and ally, and the knowledge imparted returned with ample interest. The beneficial effects of this change of sentiment, is written in the growth of our profession. The lesson taught is, what a potent factor for good our society may be made, and how to do it. Each one of us is an integral part of the whole, and our society will be just exactly what we make it. We must come here with our ideas and experiences. He who imagines he benefits himself by keeping his ideas to himself and refusing to share with his neighbors, deceives himself. For one idea he may communicate,

he will receive his reward in twenty others equally valuable. Come, then, with the intention to take part as well as listen. If you have any new ideas or new inventions, present them. If you have nothing new, study some subject on the programme, and come determined to do something or say something to add to the general interest. If you lack the facility of speaking well, of talking in polished sentences, do not let that hinder you. The society cares very little for the manner, but everything for the matter. Here is the very place for you to practice. Remember that this society is *your* society, and its members are *your friends*. Our discussions should be conducted with courtesy—all should be listened to with respectful attention, so the diffident may be reassured, and the inexperienced not mortified. Leave professional jealousies at home. If you have any grievances, bury them during the session at all events. Take it for granted you may be mistaken. To help you do so, remember how often, through the ignorance or thoughtless malice of patients, you yourself have been compelled to bear misrepresentation. How your work or your conduct has been misconstrued, how errors and failures have been attributed to you, which had not even a shadow of a foundation in fact. At all events, no matter what others may have done, come here with charity towards all, and malice toward none. By ventilating your personal grievances at such a time, you strike a blow at the success of your meeting, and make yourself a stumbling block to your brethren. Something may be learned from even the most ignorant, if not always perhaps in what they communicate than in what they succeed in drawing out of others. If views are presented which seem to you absurd and untenable, combat them in a gentlemanly way. The absurdity of to-day often becomes the dignified truth of to-morrow. The idea, for instance, of boring a hole in the jaw, and setting into it a “dried-up dead” tooth, with the expectation of its remaining there, was pooh-poohed yesterday. To-day the profession occupies an attitude of respectful attention towards Dr. Younger and his disciples. What to-morrow may bring forth we shall see. If you present a paper, make it as short as the subject will allow. Be prepared to defend your views vigorously, but accept criticism kindly, and do not be above conviction. Put your whole time in at the society meetings. Be on hand promptly so your



presiding officer will not be delayed in calling to order. Do not waste time in quibbling on immaterial points of order, so the papers and discussions, on which we mostly rely for an instructive and interesting session, may be reached quickly as possible. Be interested in what is going on. Do not let the business or discussions drag. If you observe such a tendency, jump in and put your shoulder to the wheel. Keep things moving.

This society is starting out with the policy of opening its doors to all reputable practitioners—the only qualifications necessary for admission, being common respectability and a license to practice. It is our object to do good to others as well as ourselves. If there are any within our borders who are honestly striving to better themselves, it is our mission to lend them a helping hand. This I believe to be a wise policy, for the present at least. As the leavening influence of this society spreads, the lines may in the future be more closely drawn.

Our programmes should be practical. One distinguished dentist, not along ago took the position, in one of our leading societies, that the Dental Society was no place to discuss the little petty details of every day practice, but that its time should only be taken up in the discussion of principles. This sentiment provoked a good deal of criticism, but taking into consideration the place in which he spoke, the doctor was in a measure right. Though ours is only a specialty, the field of dentistry is so broad that the discussion of principles underlying certain lines of investigation will more than take up the time allotted to any one society meeting. Our State and National societies naturally drift into certain lines of work and investigation, most important and necessary, which leaves them very little time to cover many of the details of practice. These can be left to our local societies, and this, gentlemen, is the very thing we want to make the main feature of our meetings, the discussion of questions arising out of the incidents of office practice, which never lose their interest and are always so instructive.

In preparing the work for our meetings it should be our policy to rely largely on our own members. There should be no drones here, but all should at some time or other be put into harness. Much may be learned by listening to others, but more can be learned by doing the work ourselves. By engaging our mem-



bers personally in the work, it will encourage the diffident and interest the apathetic. Our leading men are so kind and generous, so willing to help all who may need their services, that it has become quite the custom among Dental societies to rely upon them to help out the programme. This has its valuable feature, of course, but a local society should not depend on them to make its meetings interesting. We are here banded together for mutual improvement, mark the word "mutual," and the way to do that is to go to work and help ourselves. One of the most valuable privileges of a local society is the privilege of working. If we delegate that to others we get only half the good to be obtained in our society. And further, these brethren of ours, kindly answer these calls at great sacrifice of time, labor and money, with no other reward than the gratification there is in doing a good deed. That they are so generous and self-sacrificing, is the one great glory of our profession, wherein it stands unequalled by any other, but we should not on that account permit ourselves to impose on them. We may hear from them in other ways. They appear in our journals and in our State and National societies, and it should be everyone's duty to subscribe to the former and attend the latter. As well live in a house without windows, as practice a profession without reading its journals and attending its societies.

Gentlemen, I will not detain you longer ; your efficient cook, Chairman of the Executive Committee, has prepared for your delectation a feast of good things, of which I hope you will show your appreciation, by partaking heartily. His duties, owing to a variety of causes, incident to a first meeting, have been more than usually difficult and exacting, and I am in a position to speak knowingly of the energy, skill and good judgment he brought to his labors. I trust you will reward him by your appreciative efforts to make the most of the bill of fare presented.

For your kindness in honoring me with the position of your first President, I thank you. I shall try, to the best of my ability, to so serve you that you may feel, as to my intentions at least, that your confidence was not misplaced. For my failures and short comings I bespeak your kind consideration.

## PROCEEDINGS OF SOCIETIES.

## IOWA STATE DENTAL SOCIETY.

The following are abstracts of the papers read at the twenty-fifth annual meeting held at Cedar Rapids, Iowa, May 3-6, 1887.

## PRESIDENT'S ADDRESS.

BY L. E. ROGERS, D.D.S., OTTUMWA.

\* \* \* It is said a poet is born, not made; that may apply to a poet but not to a dentist. A man must have certain qualities born in him or must become possessed of them by cultivation in order to be a successful dentist, among these are: mechanical skill, patience, industry and honesty.

I have known men who possessed the first named qualifications to such a degree that with comparatively little practice they showed conclusive evidence of becoming skillful operators, but owing to the ease with which they were enabled to do that work (while others less gifted in that direction, would have to labor hard and persistently), they became lazy and indifferent and from lack of ambition or industrious habits, lost the ground they otherwise might have held, and built from, and made themselves an honor to the profession.

If one has patience and perseverance he may accomplish much, although he may not be a mechanical genius, perhaps he will be oftener discouraged and accomplish less in a given length of time, but by patience and perseverance, in time he may acquire much in the mechanical branch of his profession.

Honesty is a very important quality for a dentist to keep in sight, for we know how easy it is for one, unless he be strictly honest, to take advantage of a patient without his knowledge. In filling a tooth we must be honest in the proper and thorough preparation of the cavity, be honest in the selection of the best material with which to fill that individual cavity. Regardless of what will yield the greater profit, insert that filling to the very best of our ability, finish the same in a proper manner, and last but not least by any means, be honest in our charges for our services. It may be necessary to discriminate between two classes of patients. For one patient (in my opinion) you may honestly

charge ten dollars for the same service rendered to another for one half of that amount, and yet be honest to yourself and both patients. The one can pay you all your services are worth, in order to save the tooth, while on the other hand for the poorer patients you can better afford to give half what your labor is worth, rather than to compel or cause them to lose teeth that could be saved. And yet, do not understand me to say I would permit a patient to set a price on my service, make your own terms but in so doing remember the condition of the two patients, whether the one has an income of one hundred dollars per week or an income of two dollars for the same length of time.

In naming the qualities of which a dentist should be possessed in order to be a successful dentist, those enumerated will be found only a few of the necessary ones, but if any of them were entirely disregarded, I believe he would be found a failure. If we leave out mechanical skill, he might still be very industrious and honest but unless he was very closely related to Job he would not have sufficient patience to continue until skill came to the rescue. Leave out patience, yet be skillful, honest, and industrious, he would still be a failure for want of patience to exercise his other qualifications. Let him be possessed of skill, patience and industry, but be without honor, he would be a failure, for a dishonest man's tricks are soon brought to light. Therefore in summing up the qualities named I conclude he must possess them all to be successful. \* \* \*

#### QUALIFICATIONS AND SUBSERVANCE OF AMALGAM IN DENTISTRY.

BY DR. J. HARDMAN, MUSCATINE.

After briefly referring to its introduction into this country for treating carious teeth; its varied history, and the finale that it had come to stay, he went on to state that there are three cardinal principles that should govern in the manufacture of good alloy for dental amalgam.

1st. Metals entering into its composition should have an affinity with mercury.

2nd. The expansibility of some of these metals and contractility of others must be harmonized when made into amalgam.

3rd. They should agree with tooth structure.

Silver, tin, gold, copper and zinc are the [metals chiefly used for dental alloys.

The two first form the main basis. If silver is in excess, contraction will be the result; if tin, then a want of strength, and a tendency to draw away from the cavity wall. Copper gives strength and tends to maintain constancy of dimension, but in excess will discolor; zinc and gold should be in small quantity; especially zinc, yet enough is useful to prevent discoloration. He finds no use for platinum—thinks it is used for the name—it has no affinity for mercury and should be ruled out.

The essential properties of a good dental alloy are, workable plasticity; proper speed of hardening; efficient strength; constancy of dimension: of favorable color, and should work under water.

He proceeded to give its uses and capabilities in saving teeth by a comparison with gold.

1st. It is more secure against leakage.

2nd. Therapeutically gold has no claim, amalgam has; by the influence of the neutral salts it casts, both in near proximity to the pulp, and upon imperfect and sensitive dentine.

3rd. In very badly decayed, and frail teeth, it is of much value especially where gold is most often a failure.

4th. In situations where the coffer dam can not be used, and salivary overflow is unavoidable, it is often of immense value, and greatly supersedes gold or any other agent yet tried. For children he regards it a blessing. It saves their teeth at a minimum of pain, time and nerve tension.

5th. In conservation of tooth material in closely crowded teeth it is preferable to gold. Where small cavities in approximal surfaces, and where there is good tooth contour remaining; it is better, and is as beautiful as gold, as the latter would, in such cases supplant tooth contour with a metal that does not imitate nature.

6th. In imperfect dental structure it is far preferable. Perfect dentine is about 72 per cent mineral and 28 per cent animal tissue. Such teeth can be saved with gold or any agent in use. But teeth that may be badly formed, say 55 per cent mineral to 45 per cent animal tissue, then the tables are turned; gold is known to be faulty in such cases, and mainly so, probably, because electrically it is negative, and, as it does not yield, something else must do so, and it will be the dentos in contact.



While amalgam saves the tooth structure by yielding itself and casting in its retreat a benign salt that tends to protect and preserve the tissue in contact.

In concluding the comparison he finds for gold but *one* claim of preference—that of beauty; while amalgam has *many* over gold.

But strip gold of its ancient charm that it has held among all peoples, and bring it down to its intrinsic worth for filling and saving teeth alone, and then we behold only its *color* of which it can boast.

But accept that it is more esthetic, and that it is right to cater to this long-standing prejudice, he would then combine the two in conspicuous contouring. Amalgam has the greater *strength* and gold the *beauty*; wed the two, fill with *amalgam* and contour with *gold*.

He would not recommend bringing the gold in contact with amalgam before the latter has hardened, as discoloration of both is likely to follow; but fill with amalgam, and when partial crystallization has taken effect, cut with a sharp excavator as much of the exposed surface of the amalgam away, back to (and if needed a little beneath) the enamel border. Then at a subsequent sitting even up, and drill one or more small retaining points in the amalgam, and contour with gold. Where cutting edge is wanting leave it entirely amalgam, beginning the excavation about one-sixteenth of an inch from the edge. This is about as beautiful as all gold. Is stronger, is less exhaustive to operator and patient, and more economical in time and money.

#### DISCUSSION.

DR. I. P. WILSON said he thought there was much temptation to stray away from the use of gold, as it was more work to fill with gold than plastics. Amalgams tarnish during sickness and from medicines and become offensive. Admits that some teeth can be saved better with an amalgam than with gold. Agrees with the essayist in the use of amalgam for children's teeth, but takes exception to the method of introducing fillings in approximal cavities and leaving them as one filling. Objects to filling anterior teeth with amalgam.

DR. COCHRAN did not believe there is any offensiveness or injury from amalgam fillings, provided the patient keeps them

clean. Considers it unjust to introduce large gold fillings when it can be done in so much less time with plastics. Fills teeth anterior to first bicuspid with gold or cements, posterior with amalgam or cements.

DR. INGERSOLL stated that it made much difference what the shape of the cavity was, the kind of alloy used, etc. Some one sent him a piece of soapstone with two fillings, without stating how they were put in. After a careful examination and section he pronounced one the more perfect, but learned afterwards that it was stuffed in with the fingers, whereas the other was introduced with care. Amalgam should be placed in the cavity with as much care as gold, and the pressure brought from the walls to the center, so that the surplus mercury should be driven toward the center of the cavity instead against the walls. Believes the matrix, if judiciously used, to be a great advent, one which makes compound cavities simple to fill.

DR. REYNOLDS recommended placing cloth on the filling, and by permitting the patient to bite on the same to drive out excess of mercury.

DR. EAMES does not believe in the use of amalgam, as it does not show sufficient advantages over the use of gold. In certain cases, and under certain conditions, it is injurious to the system. He cited a number of cases in support of that view.

DR. PATRICK stated that much has been said about non-shrinkable or unchangeable amalgam; he believes those terms to be incorrect. Amalgams are bad, in his opinion, under any circumstances. As to the objection about fatigue and labor with large gold fillings, he recommends gold crown and caps. Does not believe amalgam to be a stable substance.

DR. OTTOFY believes that amalgam has become popular at a time when gold fillings were made with more difficulty and at a greater expense of time and money; good gold fillings can be made with comparative ease now; gold and tin in combination can be used in many positions. Believes that the use of amalgam should become less general, that its use in the past has injured dentistry and its progress. Non-cohesive gold makes good fillings, and rapidly.

DR. HARDMAN. The essayist in closing the discussion expressed his satisfaction in the discussion the paper aroused. He

did not believe in salivation being the result of mercury from filling, but rather of imagination. Has had much success with amalgam. Believes that the principal difficulty lies in the improper use of alloys. In mixing them uniformity and homogeneity should be secured. Does not believe in the expansion or shrinkage of a proper amalgam, but that there is much prejudice against the color of amalgam, and that there is affinity between the metals and the mercury to such an extent that they do not separate. Free mercury is not given off at the natural temperature of the body.

## A FAILURE.

BY DR. S. L. EDWARDS, DES MOINES.

\* \* \* Let him who prefers the practice of medicine be satisfied with M. D., and not be churlish toward his neighbor who believes the field of D. D. S. is large enough for the cultivation of all his faculties. The great blight upon the medical profession of to-day is the effort to secure class legislation, by which a few selfish incompetents are trying to compel the unsuspecting masses to employ them. It is not the well qualified representative men who ask for stringent laws to support weak prescriptions. He must be sadly wanting in appreciation of his responsibilities, as well as conscious of his own weakness, who advertises his want of success by asking legislation to suppress free, honest competition. We need to-day a teaching that will extend generosity, develop fraternity and constantly evolve kindness. We must not disregard the fact that any culture which does not produce a better manhood is a sad failure. A code of ethics is not worth the blank paper on which it is written, unless there be an individual principle so established as to make the code unnecessary.

“No code (of ethics) exists in other countries, hence no sects or divisions. We admire the code of the American Medical Association as a rhetorical effect; it is elegantly written, contains much good advice and wholesome sentiment. It is worthy of preservation as a fine piece of ethical literature, but we object to it or to any other composition being made an *ethical law*.” Many young men and some older ones are kept away from our societies because of the code and the manifest want of fraternity among those who should be exemplary leaders. \* \*



Elevate the standard so that the basis of qualification shall not depend more upon ability than integrity. \* \* \*

DR. L. C. INGERSOLL, Keokuk, spoke at one of the sessions at this meeting on "Dental Ethics." He said: Some young men start out like young game cocks to fight their way to fame. What does such a man think of a code of ethics? It is right for a young dentist to say I will. No society can make a code of ethics; they can announce or adopt one. The code of ethics is ingrafted in the very nature of a good, honest man. Ethics is a synonym for moral character.

What is the idea of a profession? Those who associate together to improve themselves, to advance the interests of that pursuit in which they are engaged, constitute a profession. The origin of the profession is no modern idea. There have been professions since away back in antiquity. And such things are necessities. We of the dental profession are dependent upon others for many of the comforts of life. There is a type of the professional man, and he is a well-dressed man. It will not do for a dentist to wear the clothes suitable for a ditch-digger. If he does he will not get practice.

The professions have an historical development and are the outgrowth of the benevolent elements in human nature. From the religious element have come all the professions. The ancient priest was the religious teacher, the lawyer, and the doctor, simply because of his superior intelligence. Hence these are called the learned professions. Education is the foundation of the professions. It used to be thought that a farmer and a mechanic need have no education. That is changed, and it seems now that a professional man needs a very high education. I hope the day will come when no man will be admitted to a profession until he has graduated from a literary institution.

Many men enter the professions to make money, leaving out the idea of honor and of honesty.

Talk as we will about the elevation of the dental profession it will never take place until its members adopt a high ethical code. The capital of a dentist is brain, thought, not money. As soon as one oversteps the bounds of truthfulness people lose confidence in him. We want no quack advertising in the dental profession. No dentist has a business to warrant or guarantee.



Don't talk about your competitor. You have no business to have one save in excellence.

DR. F. SLATER, of Guthrie Center, read a paper on the "Alveolar Dental Periosteum."

DR. J. J. R. PATRICK, of Belleville, Ill., lectured on "Irregularity of the Teeth." He said: The order of the development of the teeth is consistent with the development of the jaws. But marvellous as the laws of life appear to human understanding, the teeth are still inadequate to expand and grow as the softer bone does. Hence a set of small teeth is produced soon after birth, which is intended to serve until the second set appears. The first set disappears and is later replaced by larger teeth and in larger jaws. This process takes twelve years. At three years all the temporary teeth are present; previous to that age the set is incomplete, and after six they are beginning to be shed. They are lost by the physiological process of exuviation. The term exuviation in this connection is preferable to absorption, as the latter is indefinite, for there are two kinds of absorption. Absorption of composition and absorption of decomposition. The one is constructive, the other destructive. The term is indefinite, because absorption is either internal or external, and hence does not explain the process. On the other hand, the term exuviation does; it is a physiological word and means the physiological process of getting rid of a deciduous organ, before being replaced by another, as the hair of horses, the horns of deers and the shedding of nails and hoofs. Crustaceans lose their shells by exuviation instead of exfoliation. Fishes lose their scales as they grow. Children lose their teeth as they grow, and the temporary teeth are exuviated as their process disappears, and as the second new set appears with new process, which change requires twelve years for its completion. All mammals, all placental animals have temporary teeth, which are exuviated and supplied by other teeth having new processes.

Why can not the teeth grow as other bones do, and continue to grow instead of being supplied by another set? Because the formation of a tooth is the opposite from other tissues; the calcification commences at the periphery, the crown is formed and has assumed its size before eruption, and all that continues to grow is the root. A tooth when once formed is incapable of

repair, whereas bone will repair itself by throwing out plasma.

When a pulp is exposed and bleeding, some claim to save it, others even claim to do better by saving the stump of a pulp. When the pulp is exposed it is recommended to soothe it with carbolic acid and glycerine; then take oxy-phosphate of zinc and flow it over the pulp; when hard fill the cavity. Such a course of treatment forms an eschar. What becomes of that? It's absorbed, of course. How; by internal or external absorption? How can it be absorbed without absorbing organs? There are no lacteals in the pulp, and lacteals are the absorbents. The organs capable of digestion are not present in the tooth.

The bone about deciduous teeth is cancellated bone, and is exuviated including the twenty teeth. The first twenty are deciduous, the next twenty replacing them are succedaneous, the others are permanent. The jaws of man, or that space which gives the position for the teeth, grows from below upwards in the lower jaw, and from above downwards in the upper jaw, and for the permanent teeth from behind forwards, in addition. The twenty deciduous teeth are replaced by twenty larger ones, except eight of them, which are smaller, and they take the place of the temporary molars. They do not resemble either by shape, form, or position their predecessors, neither by crown nor root. The incisors and canines of the second set are so much larger that they can not take the place of the deciduous teeth. Where did the idea originate of leaving the deciduous teeth or their roots even? They are permitted to remain because they serve as guides for the permanent ones. The fact that the incisors and canines in the temporary set are smaller, and the molars larger, is reversed in the permanent by having the former larger and the latter smaller. If the temporary molars were to be replaced by molars, at the age when the change takes place they would be almost useless for the purposes of mastication, as their location would be too far from the point of leverage where the power of the muscles of the jaw is expended.

The irregularity of the human teeth is not peculiar to civilization. Wherever there is a representative of the human race, be it an Esquimaux, a Peruvian, an Indian, a Negro or a European, they all are subject to the same plan—all have deciduous and permanent teeth. But the human beings are the only race having uninterrupted sets; that is, teeth which are continuous from

one side to the other without intervening spaces. Hence, under these conditions they may not take their regular position, for many things may interfere with them. The mixture of races may greatly influence the regularity of the teeth. The canine is the last to develop and take its position between other teeth, as it is conical in shape and comes at a late period, there should be no haste made in endeavoring to regulate it, for it brings bone with it. Plenty of time should be taken for correcting irregularities, as nature works slow. The reason why irregularities take place in man only may be attributed to the fact that all other animals have interdental spaces, and hence irregularities can correct themselves. Even the monkey, whose resemblance approaches man the nearest, has interdental spaces. \* \* \*

Two mornings were devoted to clinics, and the following operations were performed: Drs. H. W. and F. M. Shriver, bridge work; Dr. S. A. Garber, gold filling, contour, Perry's separators and electric mallet; Dr. R. L. Cochran, Flagg's F alloy, mica matrices; Dr. I. P. Wilson, root canal fillings, chloro-percha; Dr. John J. R. Patrick (Belleville, Ill.), gold crowns; Dr. C. J. Tibbets (Quincy, Ill.), destruction of pulp by heroic method, gold filling, contour, Bonwill mallet; Dr. H. M. Baird; gold crown without dies; Dr. A. O. Hunt, treating pyorrhœa alveolaris; Dr. L. C. Ingersoll, soft gold filling, hand pressure, Dr. J. B. Monfort, gold filling, pneumatic mallet; Dr. J. N. Armstrong, gold filling, Snow & Lewis' mallet; Dr. T. A. Hallet, gold filling, no separation.

Dr. A. R. Begun exhibited a patient whose anterior teeth, having been abraded, were restored; Dr. W. O. Kulp, gold filling, Call's matrix, cavity lined with tin; Dr. H. W. Shriver, fistulous abscess treated, root filled, gold filling, one sitting, automatic mallet; Dr. H. W. Howe (Lawrence, Kan.), bridge work, oxy-hydrogen blow pipe; Dr. J. B. Vernon, Low crown, porcelain face; Dr. J. F. Sanborn, Flagg's oxy-chloride cement filling; Dr. J. S. Reynolds (Monroe, Wis.), administration of nitrous oxide in combination with ether, and extraction by Dr. A. O. Hunt; Dr. W. H. Eames (St. Louis, Mo.), implantation, bicuspid, for Tom Lansing; Dr. Louis Ottofy (Chicago, Ill.), implantation, incisor for Dr. S. C. Palmer, bicuspid for Dr. J. B. Vernon, bicuspid for Mr. J. F. Peters.



## ILLINOIS STATE DENTAL SOCIETY.

The twenty-third annual meeting of the Illinois State Dental Society was held at Jacksonville, May 10, 11, 12 and 13, and was presided over by Dr. W. T. Magill, of Rock Island. In the annual address President Magill lamented the fact that out of the nine hundred practicing dentists in the State but one-seventh of the number were members of the Society, and in expatiating on the benefits which accrue to those who identify themselves with their confrères in societies, said, "No diamond was ever polished without attrition," and that he who has the good of his profession at heart or would best serve suffering humanity or raise himself to deserve the recognition of a discriminating public must labor with his co-laborers. The establishment of two new dental periodicals, the organization of four district dental societies in Illinois, the visit of Dr. Herbst to America, the operations of Dr. Younger, the application of the nitrous oxide-hydrogen blow-pipe to prothetic dentistry, and Dr. Black's contribution to dental science in his articles on the periodontal membrane, published by the DENTAL REVIEW, were noted as the important events of the year. An earnest appeal was made to the members to take up a special line of study or investigation, urging that it was the men of one idea who move the world. It was again eloquently recommended to educate the laity as to the necessity of care of the teeth by the individual, and of the importance of the dentist's services.

A paper was then read from the pen of Dr. Roberts, of Waukegan, which ably handled certain phases of irregularities, and was followed by an interesting and profitable discussion.

In Dr. Harlan's essay on Practical Therapeutics he said: In the use of drugs, they are first administered unintelligently; but after it is observed that any special medicament produces a constant and unvarying beneficial result, it is certain to be looked upon with favor. Were this not true, experimentation in this direction would cease. It is not always the learned scientist who first points out the value of a remedy, but he it is who is quick to perceive its usefulness and profit by it. The blunders of the empiric and the subsequent study of the physiological action of drugs constitutes practical therapeutics. The pathologist and bacteriologist are important auxiliaries in this field of study.



The writers in this line are increasing, as may be noted by the papers of Brunton, Bruce, Martindale, Westcott, Murrell, Dujardin-Beaumetz, Paul Bert, Brown-Sequard, Lewin, Binz, Hildebrand, Bartholow and Wood, and many others. The present century has seen the decadence of much empiricism, but until the students in all medical and dental schools are instructed in physiological therapeutics, drugs will not be scientifically administered. The beginning of scientific dental therapeutics is very recent. Secret preparations have given place to drugs of known properties administered to meet observed indications. The preposterous claims of the charlatan who desires to sell his cure-all is unheeded by the man who has knowledge of diseased conditions and ability to select the remedy for scientific reasons. As our knowledge of pathology increases we need to reorganize our therapeutics. The practical value of iodoform is generally conceded; the disadvantages of offensive odor, toxic and irritant effects, under certain conditions, have been overcome by the substitution of salol and iodol, both being free from odor and other disagreeable qualities. The crystals of salol, applied to a cavity in a living tooth, cause no pain. It is indicated in acute and chronic gingivitis, and is microbicide in dilute solutions. Iodol is indicated wherever iodoform was formerly used. It is particularly useful in sluggish abscesses, in gangrenous conditions of the gums and mucous membrane. A much more stable substitute for peroxide of hydrogen is offered in ozonic ether. Lanolin is a new vehicle for the external application of drugs for the relief of pain; it is readily absorbed by the unbroken skin. Equal parts of menthol and thymol, rubbed together, liquify and make an efficient pain obtunder.

[TO BE CONTINUED.]

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#### THE AMERICAN DENTAL ASSOCIATION.

The twenty-seventh Annual meeting of the American Dental Association will be held at Niagara Falls, commencing on Tuesday, August 2, 1887.

GEO. H. CUSHING,  
*Recording Secretary.*

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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## THE ILLINOIS STATE DENTAL SOCIETY.

The papers read at the late meeting of the Society will, we believe when published in full, maintain the scientific status already gained. The policy of the Society has been for years past to develop new essayists, and this year two papers were presented by new members, both of which were excellent. We refer to the essay on irregularities of teeth and the paper on the microscope. Dr. Ingersoll read a well written and scholarly paper on medicinal stimulants, and Dr. Homer Judd read a criticism on the subject of the retention of pulpless teeth in the jaws, which was evoked in consequence of the publication of some matters relating thereto, in the *Medical Record* a couple of years ago. Dr. Brophy's paper on the diagnosis of oral tumors was, in our opinion, the best paper he has presented to the profession for several years. It indicated a practical and growing acquaintance with the subject, and will establish for him a position in his chosen field. Dr. Harlan presented a continuation of his special work on therapeutics, which was well received. Dr. Morrison read a brief essay on the operative procedures in retaining deciduous teeth in the mouth, which elicited considerable discussion. The discussion on operative dentistry, which was opened by Dr. Noyes, did not yield such practical results as the importance of the subject demanded. This, we believe, was due to various causes, the principal one being that no paper was presented. This was a mistake, as it is not easy to discuss a subject,

unless there be a clearly written presentment of principles, dogmatically stated if need be, to emphasize the speaker's position. Next year we hope the committee will not fail to have an essay on operative dentistry. The report of the committee on dental art and invention very clearly showed lack of previous preparation. This committee, in our judgment, does not seem to grasp the idea it was intended to carry out, as no summary of new methods and appliances has ever been presented by it. We deem it a duty to call the attention of the committee to this point and hope they will make amends in the future. Present a report of everything new, describe the methods or appliances, condemn or approve them, and give the reasons for so doing and much benefit will ensue. It is not possible for every dentist to purchase all new appliances or investigate a new method of practice, but the committee can do this and it is their duty to do so. The report of the committee on dental science and literature was not up to the usual standard, although we believe the Society as a whole enjoyed listening to the report. A division of the labor of the committee and a little extra reading of journals and catalogues and *new* books, will materially aid this committee, in making the next annual report. An exhaustive report will read well, and it will also save much time for members of the Society who desire to look up any particular subject, which should be noticed by the committee. It is a thankless task to prepare such a report, but as long as the committee have it in charge it is expected of the members. The clinics, well, they were not numerous and nothing very noteworthy was presented. Implantation of a tooth, two or three gold fillings, demonstration of the use of the oxy-hydrogen blow pipe, electrolytic decomposition, and the exhibition of a few new instruments, including an instrument case, was about all that we saw. The State meeting is the one to encourage clinical demonstration. We have a sufficient number of operators and ingenious mechanics to present next year, a full programme of clinical work, and the supervisor is warned that we will be after him, if he does not get up a list of operators to astonish the Egyptians, when we enter their country. Dr. G. V. Black and microbes gave an exhibition every day. The amount of patient work that has been done by this student and investigator during the years past, is known by every one, and it is

sufficient to say, that what he presented to the Society, will be food for thought for a whole year. The impetus given to the study of microbes by his own work, is not to be measured by the number of workers in bacteriology—for they are increasing—but a still greater number are reading about them and learning about the habits of particular micro-organisms, and in this way he is doing the profession an incalculable good. We sincerely hope that he will be able, for years to come, to be present at the annual meetings, and stimulate others to work in some chosen field of science, by his self-sacrificing example. The Society, as a special mark of esteem and respect to Dr. Black, remitted his annual dues for life, which was a graceful tribute to this distinguished scientist.

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#### DR. BLACK'S PAPERS.

This number of the REVIEW contains the last of the series of papers by Dr. G. V. Black of Jacksonville, Ill., recording the results of his examination into the nature of the periosteal and periodontal membranes.

These papers have appeared in each issue of the REVIEW since its establishment in November last, making 117 pages of text. It is illustrated by 67 superb cuts, made from the author's original drawings. The editor has had the privilege of examining and comparing with the cuts, many of the slides made by Dr. Black, and can testify to the accuracy and truthfulness of their reproduction.

In this connection it may be said that few who have had no experience in microscopical work, can realize the amount of time and painstaking labor represented by the illustrations accompanying these articles. Dr. Black has mounted more than 400 sections of teeth *in situ*, and other tissues, which is but one item of work in the prosecution of this particular study.

Few men possess the peculiar ability, taste, or time for such investigations, and it is a rare privilege to be able so easily to obtain the results of their immense outlay of cerebral energy and retinal purple. In truth, be it said, one can exchange paltry dollars for other men's brains.

Yet, strangely enough, this work has thus far received but meager notice from either the dental or medical profession. Per-



haps physicians who are interested in the growth of general histological knowledge will quickly come to recognize the importance of Dr. Black's investigations when the reprint of the articles, which is now in press, is brought out in book form. A separate work on this subject will be more likely to attract the notice of the general practitioner than would a periodical which is devoted solely to the interests of dentists. It is, however, passing strange that these papers should have attracted so little attention from the men whom it is so admirably designed to benefit. The cause for this may lie in the high scientific character of the papers themselves, for notwithstanding the freedom from technicalities, and simplicity of language, no small degree of culture is needed for their comprehension. They appeal, therefore, to a small number only of the dental profession, which happily is becoming larger every year.\*

It is needless here to more than allude to the increased knowledge of the histology and physiology of these tissues, achieved by Dr. Black; the articles must be read and re-read, and the illustrations carefully studied, in order to gain the great subjective benefit, and new power in coping with disease, which the facts will give. Among the more important discoveries, chronicled for the first time in these papers might be mentioned, the observations made on the lymph system of the peridental membrane; the relations of the "fibers of Sharpey" or residual fibers in bone to the periosteum, and the relation of the residual fibers in cementum to the fibers of peridental membrane.

Finally, the conclusion of these articles furnishes a text-book which, without doubt, gives as full and accurate a knowledge of the structure and functions of the periosteum and peridental membrane, as present means for microscopical research will permit, and henceforth this new light must be imparted to college classes as essential fundamental principle, and practitioners must add this new knowledge to their mental equipment, in order to intelligently render the best services to their patients.

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\* Three letters have recently been received by the publisher, from subscribers, asking that their names be stricken from the subscription list of the REVIEW, on account of its too scientific character.

## IOWA STATE DENTAL SOCIETY.

The twenty-fifth annual meeting of the Iowa State Dental Society, held at Cedar Rapids, Iowa, last month was in every particular worthy of the pioneer state society of the West. About one hundred and fifteen dentists were in attendance. Twelve good papers were read, and two mornings were devoted to interesting and instructive clinics, which in this society are under the charge of the vice-president, who is the superintendent of clinics. The next annual meeting will be held at Iowa City, Iowa, on the first Tuesday in May, 1888. The officers elected for the ensuing term are: Dr. W. P. Dickinson, Dubuque, president; Dr. A. O. Hunt, Iowa City, vice-president; Dr. J. B. Monfoot, Fairfield, secretary; Dr. J. S. Kulp, Muscatine, treasurer. A condensed report of the meeting will be found under the head of "Proceedings of Societies" in this, and subsequent issues of the REVIEW.

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## DENTAL DEPARTMENT—NATIONAL UNIVERSITY.

On another page is a report of the commencement exercises of the Dental Department, National University of Washington, D. C. One of the principal features presented by this institution for public favor, is embodied in the following paragraph, copied from the most recent announcement: "The Diplomas of this school are signed by the President of the United States, who is ex-officio Chancellor of the University, by the President and Secretary of the Board of Regents, and by the Professors in the Dental Faculty." This is indeed a prize of which no other institution, wherein dentistry is taught, can boast. Nevertheless it is true that notwithstanding the high authority of the President of the United States, his signature attached to the documents emanating from this Institution, will not admit the holder to practice in many of the States, among them Illinois. The possessor of a diploma from the National University, bearing the name of Grover Cleveland, will be obliged to undergo and successfully pass an examination, before the State Board of Dental Examiners before being admitted to practice. That such are the facts is to be sincerely regretted. The National Association of Dental Faculties, of which most of the dental colleges are mem-

bers, and the National Association of State Boards of Dental Examiners, in which most of the States having such boards are represented, require that a student before receiving the degree of D.D.S., *shall* have attended two full course of lectures. The National University does not comply with these requirements, as it will accept, equivalent to one course of lectures "five years' dental practice." The Meharry School of Dentistry having abolished this method, as stated in an editorial in the May number of the REVIEW, there are but two schools aside from the dental department of the National University, which fail to comply with the legal requirements, and those are, the dental department of the University of Tennessee at Nashville, and Howard University at Washington, D. C. The attention of the officers of these schools having thus been called to this matter, it will afford the REVIEW much pleasure to chronicle a change to that which is in the interest of the advancement of dental science.

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#### THE AMERICAN COLLEGE OF DENTAL SURGERY.

One of the most disgraceful sights in Chicago, is the method of advertising resorted to by this institution, which has now lowered itself to the basest level of degradation. Its windows are placarded with: "Teeth extracted free" "All work warrented," "college prices," etc. The work "warrented" by the class of men at the head of the institution must be of a nature of brass unexcelled in quality. An utter disregard is shown even for its own name, calling itself either the "American Dental College" or the "American College of Dental Surgery." Students, in making their selection of the college they should attend, will do well to remember, that within easy reach of Chicago there are six good dental colleges and Chicago itself, has two reputable institutions. Whenever the "American College of Dental Surgery" will abandon its disgraceful course and adopt a manly upright method, and devote itself to the *teaching* and *education* of men who desire to enter the ranks of the profession, there will be no journal which will be more pleased in making record of such change than the DENTAL REVIEW.

## THE ILLINOIS MEETING.

The meeting at Jacksonville this year, in spite of the Interstate Commerce Bill, was well attended. A larger number of visitors from St. Louis we do not remember to have seen at any previous meeting. There were several gentlemen from Indiana, Iowa, California and other States nearer to the borders of Illinois. The programme, so far as the reading of papers and reports of committees, and the giving of clinics, was carried out with one or two minor exceptions. There was a notable absence of dealers' exhibits, only one house showing a line of dental instruments. From some remarks made by country members we do not think they looked on the absence of displays with favor. We are not prepared to state whether it is of benefit to houses selling goods, to exhibit their wares at annual gatherings or not, but we lean to the belief that the majority who attend State Society meetings, consider such exhibits a part of the programme and they certainly miss something that might repay them for the outlay of time and money spent in attending a meeting. It is not always the discussions or reading of papers, or the witnessing of clinics, that is most profitable to some, and we fancy that it was a mistake to omit the annual display of dental goods, from a purely business standpoint. Next year we hope to see full lines of merchandise displayed at Cairo, as the meeting of the society at that point is of a missionary nature, and we feel certain that as many will be attracted to the meeting to see the new inventions and appliances, as will be present to listen to papers or discuss them. They go hand in hand and are inseparable. The society elected the following officers:

President, C. B. Rohland, Alton; Vice-Pres't, Chas. Henry, Jacksonville; Secretary, Garrett Newkirk, Chicago; Treasurer, T. W. Prichett, Whitehall; Librarian, W. B. Ames, Chicago; member of the Executive Committee, James W. Cormany, Mt. Carroll; Supervisor of Clinics, W. P. Richards, Englewood; Board of Examiners, J. F. Marriner. Eugene S. Talbot, Member of Committee on Art and Invention, and Thos. L. Gilmer, Member of Committee on Science and Literature.



## INDIANA STATE DENTAL ASSOCIATION.

Every live dentist in Indiana and adjacent States is expected to attend the next meeting, at Lake Maxinkuckee, Tuesday, June 28, 1887. We are assured that no effort will be spared to make visitors comfortable. Programmes will be mailed on application to the President, J. K. Pattison, LaFayette, Ind.; E. W. Anderson, Indianapolis, or the Secretary Dr. Van Valzah, Terre Haute, Ind. A reporter for the REVIEW will be present to make a synopsis of the proceedings.

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## THE CHICAGO DENTAL SOCIETY.

At the July meeting, which will be held Tuesday evening, July 5, at 45 Randolph street, there will be a symposium on capping exposed pulps. The following gentlemen will read papers, not to exceed ten minutes in length: George H. Cushing, I. A. Freeman, A. W. Harlan, D. M. Cattell, C. P. Pruyn, and T. W. Brophy. The discussion to be opened by J. N. Crouse. A cordial invitation is extended to all members of the profession who can possibly be present. The capping of exposed pulps has occupied the attention of the society the past two meetings, and on account of the general interest in the subject it was decided by resolution to devote this evening to its further consideration.

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## PATENTS.

RESOLUTIONS ADOPTED BY THE FIRST DISTRICT DENTAL SOCIETY, STATE OF NEW YORK, AT A REGULAR MEETING HELD IN NEW YORK CITY ON TUESDAY EVENING, JUNE 7, 1887.

WHEREAS, members of this society are threatened with suits for damages and injunctions, if certain letters patent for alleged improvements in dentistry are not recognized, the validity of which has been gravely questioned, and the right to use is wholly refused, or terms or conditions imposed which would be a heavy tax upon the profession and the community, for many years; and,

WHEREAS, it would be unjust for one or two members to bear the labor and heavy expense attendant upon determining how far the pretensions of such patentees ought to be respected; therefore,

*Resolved*, that each member of this society be requested to contribute five dollars to its treasurer towards a protective litigation fund, to be expended as the officers of the society or a special committee direct.

*Resolved*, that a copy of these resolutions be sent to other dental societies, with a suggestion of the imperative necessity of financial co-operation, if effective resistance is to be made to the preposterous demands now made upon dentists by patentees.

W. W. WALKER,  
President.

## DOMESTIC CORRESPONDENCE.

### LETTER FROM NEW YORK.

*To the Editor of the Dental Review.*

SIR:—The nineteenth annual meeting of the Dental Society of the State of New York was opened at 10 A. M. on Wednesday, May 11th, in the Common Council Chamber at Albany.

The President, Dr. Norman W. Kingsley, opened the meeting with the usual annual address, which, when printed in full, will make interesting reading. Among other things he said there were three events characteristic of the past year:

1. Herbst's visit.
2. Knapp's artistic and invaluable work before the American Dental Association.
3. Visit of Dr. Younger, of California.

\* \* \* Our legal relations to our clients and theirs to us are chaotic. Law for the protection of life, property and the government of corporations is pretty well defined, but of law governing the relations of dentist to patient and *vice versa* there is little or none. Something ought to be done in this respect.

\* \* \*

That dentistry is now an independent profession no one ought to dispute, while the question as to whether it should ally itself with medicine is one upon which men may conscientiously differ.

\* \* \*

It is largely through our independence that our *esprit de corps* is maintained. \* \* \*

If the Dental Section in the International Medical Congress prove a success, we shall all rejoice; if it prove a failure, we will all unite in one grand effort to have an International Dental Congress which shall redeem all the mistakes.

The Committee on Practice next made a very lengthy report through its chairman, E. Parmly Brown. This committee has hitherto been such only in name, and much credit is due to Dr. Brown in showing to the Society that the committee had a duty to perform and how it should be done. The report embraced all the phases of practice as carried on during the past year. The committee differed on one important question—the Herbst method—concerning which they were diametrically opposed to one another, and in the discussion following the reading of the report the members in turn took sides on the question. The Herbst obtunder and cocaine were next touched upon; then the screw separator, which he said had come to stay, but was being very much misused. The Knapp blow-pipe he called the marriage of nitrous oxide and illuminating gas, forming the hottest thing in dentistry. The report also took cognizance of the E. P. Brown bridge work, Perry-Weber engine, implantation and irregularities. The remainder of the morning was taken up in a lengthy discussion of the report, participated in by Drs. Brockway, Weld, Rhein, Green, Brown, Darby, Nellis, Gregory and Geran, of Brooklyn, who explained how he had simplified Dr. Knapp's blow-pipe. He took an ordinary large bulb burner, taking off the burner and soldering in place of it the end of an ordinary jeweler's fine blow-pipe; in the side of the bulb is soldered a metal tube, which, by means of tubing, is connected with the cylinder of nitrous oxide: to the free end of the bulb is attached another piece of tubing, which is connected with the jet of illuminating gas. The bulb takes the place of Knapp's mixer. The next day Dr. Geran practically demonstrated the simplicity of the thing by manufacturing one at an outlay of thirty-five cents, which, after exhibition before the Society, he presented to the oldest practicing dentist present, Dr. W. H. Dwinelle.

In the afternoon the Society resolved itself into a Symposium and listened to the papers on "Teeth with Dead Pulps without Fistulæ and the Filling of Roots." Dr. J. Morgan Howe, of New

York, read the first paper, which was then demolished by a paper written by Dr. C. T. Stockwell, of Springfield, Mass.; he, however, was not present, and Dr. Brockway read the paper. This paper was the valuable one of the three; the main substance thereof appeared in print some time ago. To Dr. F. Y. Clark, of New York, was assigned the task of knocking out the Yankee contribution. He, however, came to grief in the effort. A lengthy discussion followed, during which Dr. Atkinson recommended the use of 1 grain of potassio mercuric iodide to vi oz. of water in place of the bichloride of mercury solution.

A majority of the District Societies sent resolutions praying the State Society to cease granting the degree of M. D. S. Nothing definite was done in the matter.

The evening session was entirely taken up with legal and political affairs. Daniel Nason, Esq., of New York, read a very lengthy paper on "Legal Decisions Relating to Dentistry." A copy of this paper, when it appears in print, will be of great value to every dentist whenever he gets anywhere near the domain of the law.

The Society presented to Mr. Nason a purse of \$200 for his valuable work. The election of officers wound up the evening session. This was conducted on a very harmonious basis, as all the old officers were re-elected for the ensuing year.

The closing session of the Society was opened on Thursday morning by Dr. G. W. Melotte, of Ithaca, giving a laboratory demonstration showing his uses of the blow-pipe clamps, moldine, etc. The Society then formed themselves into Symposium B, and listened to a paper on "Implantation," by Dr. G. L. Curtis, of Syracuse. He showed himself to be a very ardent disciple of Dr. Younger, and, like very many young men, felt that his dictum settled everything. Had he not given the matter seven whole months of trial? Any one essaying to doubt his successes was a sceptic and unworthy of notice. Dr. G. W. Weld, of New York, replied to Dr. Curtis in a forcible, clear and well-written paper, in which he advised his friend to wait seven years before he allowed his enthusiasm to reach such bounds. As far as his experiments could indicate, he believed absorption of the roots would surely take place and a few years of toleration *could not stamp the operation a success.*



Dr. Bödecker, of New York, is now making experiments on animals, which it is hoped will help very much to clear up this point of resuscitation of the old pericementum. In the discussion that followed, Dr. E. P. Brown warmly seconded the paper of Dr. Weld and deemed the operation unjustifiable, and warned the profession never to call him to the witness stand to testify as to the propriety of the operation. Drs. Atkinson, Jarvie and Rhein advocated waiting for the final results of the operations already made, and the experiments now being performed, before taking any decided stand.

The President then appointed the committees for the ensuing year, after which the Society adjourned. M. L. R.

NEW YORK, May 25, 1887.

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#### LETTER FROM WISCONSIN.

*To the Editor of the Dental Review :*

SIR:—The question as to whether dentistry is a profession *per se*, or a specialty of medicine brings to the surface the fact that the majority of dentists are without degrees or college training, and but a small percentage hold diplomas, dental or medical. The tendency is to make the college the door-way to the profession, and to this end some states have, and others are striving to enact laws making a diploma requisite to commencing practice. This is right as to the recruits, but unjust to the majority who have no diplomas, but render valuable services without them. They must stay where they are or cease to practice. The aforesaid majority may rebel, and dental laws, needed and right, go down in the reaction.

Could every dentist hold a diploma honestly earned, dentistry as a profession would take a higher position, and difficulties in the way of further advances would be removed. But many of them have families, and can not afford the loss of time, or the loss and damage to their practice, arising from attendance on two full courses of lectures, each a repetition of the other. To remedy this I would suggest that the dental colleges prescribe a course of reading, including one or more of the dental periodicals, and allow any dentist of five years' practice, or more, properly registered and in actual practice, under the laws of his

State, to pay the matriculation fee, and follow the prescribed course at his home, and when ready, present himself at the proper time for examination, paying a reasonable fee therefor, and, if successful, receive a certificate that shall be taken as the equivalent to one course of lectures. If he afterwards takes one course of lectures, and successfully passes the final examination, he shall be entitled to his diploma. This will give worthy men in the profession a chance, and not open the back-door for the recruits. I hope this will meet with some consideration. I can see much good and little, if any, evil in such a plan.

Yours truly,

J. S. ROUNCE.

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## FOREIGN CORRESPONDENCE.

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### LETTER FROM LONDON.—No. III.

*To the Editor of the Dental Review :*

DEAR SIR:—Here we find in dentistry, as in other professions, national features that stamp it as “English you know, quite English,” some of which I consider quite an improvement upon some of the modes in vogue in the land of the “Stars and Stripes,” and others — well, I can’t say quite as much for, both of which I shall endeavor to comment upon as I proceed. In the first place nearly all the practices that are considered as such, are carried on at private residences. This rule holds good both in and out of London, and the only place where the term “office” would be applicable is where the practices are carried on in connection with a drug store, or by a class of persons almost invariably of Hebraic extraction, who advertise “institutes” where capacity surpassing that of the staff of any dental college is “within the reach of all desiring work at popular prices.” Another of this class is the so called “working dentist,” whose only claim for notice is the lavish display in his usually large front window, of as inartistic mechanical work as it has ever been our lot to look upon, embellished with seductive information regarding his work, which he always informs his patrons is “on the H’american plan.” Here you can get teeth extracted while you wait, and all other dental attendance as can only be found in first-class

establishments (of this kind). I hope and believe the doom of this class of tinkers is sealed, but a generation or two must pass away ere their extermination is effected, for it is a well-known fact that many of these men have registered as dentists (from the fact of their having extracted a tooth or two prior to 1878, when the present dental law came into force), employ any number of incompetent assistants to manage branch practices for them, where dentistry of the vilest type is foisted upon their unsuspecting victims. Their coolness in asserting their special advantages for practicing the latest American methods, is only surpassed by their incapacity for proving themselves to be aught else, than lineal descendants of Annanias. I shall speak more of their methods later on.

One thing that impresses me favorably here respecting the best class of practices is the seclusion enjoyed by both patient and operator. The waiting room and operating rooms are usually on different floors, thus securing immunity from interruptions and securing a better utilization of time, which in a large practice is of infinite importance to both patient and operator. There is also a noticeable absence of the free and easy manners—I am afraid too prevalent—in the United States, where the operating room is usually free to all comers, making that privacy impossible, which is so frequently essential, when a patient has to undergo a tedious and more or less painful operation.

The operating room here is the “holy of holies” into which no one but operator, patient and assistant enters during hours of practice; and should a stranger, though he be a dentist, seek admission, to get an idea of appliances or methods, if he has any perception at all, he will soon appreciate he can better secure his information and feel less the intruder by securing an introduction to a society, or by paying a visit to the dental depots or consulting the journals; quite a difference from the free and open custom prevalent on the other side of the Atlantic.

I cannot help but think it is the liberal exchange of ideas that has caused dentistry in America, to take the position it now occupies among the most liberal of the professions.

What is true of its people, is necessarily true of a nation, hence I cannot but think it is a sad commentary upon the status of dentistry here, when we see from the reports, the smallness of



the attendance at the meetings of the various societies. It must be a thankless task for the workers in the profession, to attempt to lift the drones to the place they would wish them to occupy, and thereby to assist, if only by their presence, in enabling a profession, that everywhere but in England is looked upon as one of the most advanced and practical of the nineteenth century.

One thing I can hardly understand is, why there should be such an utter lack of desire or attempt to do thorough work among the profession in general, for every day I see evidences of this slovenly tendency, and when dentists are spoken to about the personal satisfaction derived from doing thorough work, the rejoinder is almost invariably, "you can't get paid for it," or "patients won't submit to tedious operations." My experience is just in proportion as your patients have confidence in your capacity and desire to do the best possible for them, just in proportion will your efforts be reciprocated by them, in the matter of both fee, and any reasonable inconvenience they may necessarily be subjected to during an operation.

The height of the average dentist's ambition is attained when a plastic filling is inserted, fee obtained, and patient told the tooth will need filling again in about a year. Such a state of affairs is bad indeed, especially for the coming dentists, for with such teachings and observations presented for their consideration, how—unless a person of more than ordinary force of character—is a student to rise above his surroundings? And I am well assured that any project to modify this appalling state of affairs meets with a very cool reception, for there is one man in London, occupying a very prominent position in the profession, and whose name is equally well known on both sides of the Atlantic, whose has tried time and time again, in the society with which he is associated to institute a series of clinics at its annual meetings, but has always failed to secure co-operation beyond the committee stage, and at other times, at his own expense and individual effort made arrangements to hold clinics, inviting competent operators to demonstrate, and others for mutual improvement to attend, and one would naturally think after all this enough interest should be taken in the matter to secure the attendance of more than a dozen persons, but such was the meagre assemblage on one of these occasions, and that too in a city the size of London.



Apathy is hardly expressive enough to do the subject justice when we compare a recent clinic of a New York society, with the one I have just mentioned. Just how this state of affairs is to be remedied is a problem that is rather difficult of solution, when we consider the peculiar features presented by the law coming into effect on June 1st, whereby students are required to pass the conjoint examinations of the Royal College of Surgeons, and the Royal College of Physicians, as well as that for the L. D. S. (Licentiate of Dental Surgery) thereby entailing upon the student a devotion of time that, in my humble opinion might be much better employed, especially were the facilities only afforded for so doing; however, the foregoing subject is too far reaching to be but mentioned, and not gone into in this letter.

That the outlook for operative dentistry in England is not very encouraging, no careful observer will deny, and I predict that, the public becoming enlightened in advance of the profession here, demands for better work will be made. This will result in legislative modification that will be a benefit to both the profession and to the public.

London, England, May 14.

“78”

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LETTER FROM LONDON—DENTAL ALLOY.

*To the Editor of the Dental Review.*

SIR:—Permit us to supplement the note on Dental Alloy which was contributed to the February number of the DENTAL REVIEW by a London correspondent of yours. This metal was first introduced early in the year 1851, since which time it has been extensively employed in the United Kingdom, in France, Germany and other parts of Europe, and also in the British colonies. We believe we are well within the mark, when we say that more than two hundred thousand ounces of it have been used during the thirty-six years that it has been before the profession. Its cost is rather less than one-third the price of sixteen carat gold, but it is not to be despised on this account, for it is well adapted for dental plates and renders good service to a large class of patients who would find it difficult to bear the cost of gold.

Yours faithfully,

C. ASH & SONS.

London, April, 1887.

## REVIEWS AND ABSTRACTS.

THE AMERICAN SYSTEM OF DENTISTRY, BY VARIOUS AUTHORS.  
VOLUME TWO. EDITED BY W. F. LITCH, M. D., D. D. S.  
LEA BROTHERS & CO., PUBLISHERS, PHILADELPHIA, PA.  
Cloth \$6.00 ; Leather \$7.00 ; Morocco \$8.00.

A royal volume of more than one thousand pages, copiously illustrated with many new and original cuts and drawings. Covering the whole field of operative and prosthetic dentistry. An extended notice of this volume will be given at a later date ; for the present, however, we cannot too strongly urge our readers to subscribe for it, as nowhere else in the English language can there be found such a well digested mass of information for all classes of dentists. While there may be differences of opinion about some of the methods described and the theories presented, still the volume as a whole is an epitome of the vanguard of progressive dentistry.

TRANSACTIONS OF THE NEW JERSEY STATE DENTAL SOCIETY for the years 1884-5-6, p. 203. The transactions as published, combining the reports of three years in one volume, contain twenty papers (of which three are presidential addresses) with the discussion thereon and the minutes of the various meetings of the Society.

Whenever it is found necessary to retain the papers read before a Society until a sufficient number have accumulated to make it an object of publishing a presentable volume, the existence of such a state of affairs is deplorable. The volume before us contains papers read three years ago, which should have been presented to the profession at large some time ago. The New Jersey Society may be congratulated on the possession of talented members within its ranks, as well as on the valuable aid it receives from New York, Brooklyn, etc. The papers discuss topics which are foremost in the consideration of the dental profession. The papers, as a rule, are able and creditable documents, and the discussion of a lively, interesting nature, somewhat too voluminous, yet able and profitable. Aside from cutting down the discussions, a separation of the scientific matter from

the purely business proceedings and minutes of the society, would have aided in making a still more presentable work.

## PAMPHLETS RECEIVED.

Report of the Commissioner of Education for the year 1884-5. John Eaton, Commissioner, Washington, D. C., 1886.

ZAHNÄRZTLICHE BELEHRUNGEN FÜR LAIEN, von DR. ADOLF PETERMANN, Frankfurt am Main, Germany. This publication is a pamphlet of thirty-one pages and intended for the better education of patients in regard to the dental organs. The matter contained in it is of the usual nature, well written and readily comprehensible. Typographically nothing remains to be desired.

Transactions of the Dental Society of the State of New York. Eighteenth annual meeting. Albany, N. Y., 1886. This is a pamphlet of 55 pages, containing several papers read before the society, and the business minutes, with a list of members of the district societies, and miscellaneous matters, mostly interesting to the members. The proceedings of any one of the district societies would, we think, be more interesting to the general reader than the whole volume before us.

## TRANSLATIONS.

As an example of thoroughness prevalent in foreign schools, we translate from the April (1887) number of the *Oesterreich-Ungarische Vierteljahrsschrift* the following: "Annual Report of the Public Dental Infirmary of Budapest, Hungary," for the year beginning March, 1886, and closing in March, 1887, as compiled by Anton Kozma, the Assistant of the Infirmary.

The following is the Sixth Annual Report of the Infirmary. The results exceed those of previous years in the number of patients, but the number of students (about 130) was fewer than in former years. This fact may be ascribed to the limited space at the command of the Infirmary. The inconvenience was in part relieved by the addition of another operating chair, making a total of six. The Institute was open for the public during eleven months, three times a week from 5 to 6:30.

The number of patients treated was:

Men.....	933
Women.....	950
Boys (under 14 years).....	170
Girls ( " " ).....	130
Total.....	2183

## DISEASES.

Caries dentalis .....	470
Diseases and shedding of temporary teeth .....	115
Salivary calculus .....	43

## DISEASES OF THE PULP.

## I. Pulpitis acuta.

1. Pulpitis acuta septica (seu superficialis) .....	40
2. " " partialis .....	38
3. " " totalis .....	66
4. " " partialis purulenta .....	3
5. " " traumatica .....	2
	<hr/> 249

## II. Pulpitis chronica.

1. Pulpitis chronica, parenchymatosa .....	193
2. " " totalis purulenta .....	13
3. " " hypertrophica granulomatosa .....	11
4. " " gangrenosa .....	126
5. Gangraena pulpa totalis humida .....	67
6. " " siccata .....	2
7. Pulpitis chronica idiopathica .....	2
	<hr/> 412

## III. Atrophia pulpæ.

Atrophia pulpæ simplex .....	1
	<hr/> 1
Total of diseases of the pulp .....	<hr/> 662

## DISEASES OF THE ROOT MEMBRANE.

## I. Periodontitis acuta.

1. Periodontitis acuta marginalis .....	3
2. " " apicalis .....	13
3. " " circumscripta consecutiva .....	22
4. " " diffusa .....	27
5. " " purulenta diffusa .....	5
6. Abscessus apicalis .....	9
7. Phlegmone acuta septica osteo-peridentalitis .....	8
	<hr/> 87

## II. Periodontitis chronica.

1. Periodontitis chronica apicalis .....	55
2. " " diffusa .....	165
3. " " purulenta .....	3
4. " " granulomatosa (apicalis) .....	2
5. " " " (diffusa) .....	2
6. Necrosis apicalis .....	46
7. " totalis .....	126
8. Caries alveolaris (seu osteo-periostitis alveolo-dentalis ) partialis .....	8
[Magitôt] .....	4
	<hr/> 411

Total of diseases of the Root membrane .....	498
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## Diseases of the Maxillæ.

1. Abscessus alveolaris circumscriptus (seu extra alveolaris) .....	18
2. " " chronica .....	55
3. " (processus) alveolaris diffusus .....	6
4. Periostitis alveolaris chronica circumscripta .....	19
5. " " " diffusa .....	14
	<hr/> 112



LESS FREQUENT FORMS OF DISEASE.

Inflammatis papillæ interdentalis.....	1
Gingivitis acuta circumscripta.....	4
“ “ diffusa.....	1
“ “ chronica.....	3
“ “ traumatica.....	1
Stomatitis ulcerosa.....	1
Asperitas coronæ.....	10
Anomalia dentis.....	4
“ eruptionis dentis sapientie.....	10
Dolor post extractionem.....	4
Hypertrophia papillæ interdentalis.....	3
Hiatus palati duri.....	2
Ulcus traumaticus.....	1
Trismus muscularis.....	2
Neuralgia nervi mentalis.....	1
Cat. Chron. sinus maxillaris.....	3
Fistula cutanea maxillaris inferior.....	3
Necrosis processus alveolaris.....	1
“ ossis maxillaris inferior.....	1
Luxatio dent. traumatica.....	4
Odontoma.....	1
Fibroma periodontalis mol 1 inferior.....	1
Epulis sarcomatosa.....	3
Atrophia alveolaris senilis.....	9

74

Number of Treatments.

Extraction: Permanent teeth.....	1027	} 1142
Temporary “.....	115	
Conservative operations.....	513	
Replantation.....	1	
Advice.....	179	
Removal of salivary culculus.....	45	
Necrotomia.....	2	
Oncotomia.....	5	
Exstirpatio (papilloma, epulis).....	6	

1893

Several of the unusual cases are described and their treatment related; among these there was one case of a man, 38 years of age, afflicted with chronic catarrh of the antrum, which did not improve after a prolonged treatment with chloride of zinc and carbolic acid; but was rapidly cured by injections of bichloride of mercury, using 1:1000 and 1:2000.

On the fourth of this month the *Zahnärztliches Wochenblatt* (Dental Weekly) made its appearance in Hamburg, Germany. In one particular, that of its weekly publication, it differs from all other periodicals devoted exclusively to dentistry. The publisher designs it to contain in each number abstracts and short treatises on matters of interest to the profession and in the field of dental mechanism. As a medium for advertisements relating in any way to dentistry, the seeking of positions, etc., it is intended to supply a place for which a demand has been felt. Its subscription price in Germany has been placed at 4 marks (96c) and for foreign countries at 5 marks (\$1.20) per annum. Dr. Ph. Andreae, Rathhaus-strasse No. 10, Hamburg, Germany, is the editor.

## DENTAL COLLEGE COMMENCEMENTS.

### DENTAL DEPARTMENT — NATIONAL UNIVERSITY.

The third annual commencement of the Dental Department of the National University was held at the Congregational Church, Washington, D. C., on Tuesday evening, May 3, 1887.

The diplomas were awarded by GROVER CLEVELAND, President of the United States, Chancellor, Ex-officio of the University. The following named (6) students received the degree of Doctor of Dental Surgery: Harris C. Carroll, Pennsylvania; John A. Daly, District of Columbia; John A. Drawbaugh, Pennsylvania; Wm. N. Hunt, District of Columbia; Jacob S. Manners, New Jersey; Millen F. Phillips, Pennsylvania.

### DENTAL DEPARTMENT — UNIVERSITY OF PENNSYLVANIA.

The annual commencement exercises of the Dental Department of the University of Pennsylvania were held in the Academy of Music Monday, May 2, 1887.

The degree of Doctor of Dental Surgery was conferred on the following graduates: Georgia—William W. Hill. New York—William Frank Arnold, John B. Howe, Ralph G. Payne, and William Jarvis Turner, M. D. Ohio—Charles W. Outcault and Samuel A. Pancoast. Pennsylvania—Frederick W. Amend, jr., Henry W. Bohn, Charles A. E. Codman, Thomas J. Dunn, Walter V. Elliott, Dwight B. Fuller, jr., Julian T. Hammond, jr., Isaac W. Herbein, W. Howard Johnson, William L. Jones, jr., Milton N. Keim, James A. Milliken, John F. O'Malley, Alfred Paxton, Milton Powel, William F. Reh fuss, Howard S. Seip, R. Hamil, D. Swing, Ambler Tees, jr., Orandus H. Uhler, Richard J. Wall and Joseph W. White. Vermont—Fay H. Deming. Cuba—Lombard Fernandez. Arthur F. Garesche and Fernando A. de Zayas. District of Columbia—Oliver D. Darrell. Ecuador—Eduardo A. Pérez. France—Felix J. Despecher. New Brunswick—R. Peel Doherty. Norway—Michael N. Bentzen. Switzerland—Théodor Frick.

The following is the amended article of the Wisconsin dental law in full: Section 1. Section 6, of chapter 129, of the laws of Wisconsin for the year 1885, is hereby amended so as to read as follows: Section 6. Any person who shall violate any of the provisions of this act, or who shall pursue or practice dentistry in this State without having annually registered, or who shall pursue or practice dentistry in this State without having a license therefor, as herein provided, or who, having such license, shall fail or neglect to annually register, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than ten dollars and not more than one hundred dollars for each and every offense. And each patient treated and each operation performed shall be deemed a separate offense under this act; and each registration shall expire on the thirtieth day of September of each year; provided, that this act shall not be construed so as to prevent regular practicing physicians, residents of this State, from extracting teeth.

## MEMORANDA.

Connecticut has a dental law.

Arkansas now has a dental law.

Have you used Dr. Woolley's root dryer?

A new dental college is to open its doors at Atlanta, Ga.

Dr. E. C. Timerman has located in Oakland, California.

Dr. J. H. Martindale, of Minneapolis, will shortly sail for Europe.

The Wisconsin State Dental Society will meet at Milwaukee, July 19 to 22, 1887.

"Hydronaphthol soaps" are among the latest products of Seabury & Johnson, of New York. Try them.

Eugenol, 5 per cent., and lanolin 95 per cent., makes a good ointment for a variety of purposes. Try it.

The DENTAL REVIEW will shortly publish a series of papers on Operative Dentistry by a well known writer.

New Hampshire Dental Society.—The annual meeting will be held at Concord, N. H., June 21 and 22, 1887.

Keep your eyes open about this time for the man who is *extremely* anxious to have a piece of bridge-work inserted.

Dr. Thomas B. Wheeler was on the steamship *Brittanic* when she collided with the *Celtic*. He escaped without injury.

It is stated that aluminium can be soldered, by a new process discovered by Dr. C. C. Carroll, of Meadville, Pennsylvania.

It is said that cooling a metal plate in alcohol after annealing, will leave it much softer than if cooled gradually or thrust into water.

Pennsylvania Dental Society.—The nineteenth annual meeting will be held at Glen Summit, Luzerne Co., Pa., commencing July 26, 1887.

Gum camphor, carbolic acid crystals, alcohol and oil of wintergreen, equal parts, is stimulant, anæsthetic and mildly counter-irritant.

Drs. J. Taft, W. Taft, H. J. McKellops, K. B. Davis, B. Douglass, and several others, were in attendance at the Medical Association meeting.

The Minnesota Dental Association and Board of Examiners will meet at Minneapolis the second Wednesday in July. Dr. C. M. Bailey is the president.

Dr. O. Carpenter, of Oakland, California, was present at the Illinois meeting exhibiting some new clamps to facilitate operations below the gingival margins.

The venerable "Jerry" Robinson was a visitor at the May meeting of the Odontological Society. He dates his first root filling from 1840, using tin at that time.

The Northwestern Dental Association meets in Fargo, Dak., Tuesday and Wednesday, July 26 and 27, 1887. H. L. Starling, President; S. J. Hill, Secretary.

At the State meeting at Jacksonville the flowers of sulphur was advocated as a dentrifice on account of being a disinfectant! Sulphur is inert, used for such a purpose.

VIENNA DENTAL SOCIETY.—At the annual meeting of this Society, Dr. Jac. Taussig was re-elected President; Dr. Hier. Svetincich Vice-President, and Dr. Heinrich Pfeffermann, Secretary-Treasurer.

From our correspondent in Mexico, we learn of an excellent opportunity for a first-class dentist, who could form a partnership there with a gentleman having a practice worth from \$15,000 to \$24,000 per annum.

Dr. L. Ottofy is translating from the German Dr. Julius Parreidt's work entitled "Compendium der Zahnheilkunde." It is to be annotated by Dr. G. V. Black and published by W. T. Keener very shortly.

Dr. G. V. Black has accepted the appointment of Superintendent of the Infirmary of the Chicago College of Dental Surgery, and will assume control the last of September. He retains the chair of Pathology in the college.

A new dental journal is about to be established at Geneva, Switzerland. It is to be in the French language and entitled *Revue et Archives suisses D'odontologie*, and will be edited by Prof. Camille Redard, of the *Ecole dentaire*, of Geneva.—*Oest.-Ung. Viert.*

Dr. Cormany brought down the house in opening the discussion on therapeutics. It would have done you good to have heard him. We hope the executive committee will give him an opportunity next year to repeat the performance as it was electrical.

Dr. Charles Houghton, of Batavia, N. Y., publishes a useful little pamphlet intended for general distribution among patients, and entitled "A Sensitive Point. What Care Do You Take of Your Teeth?" Also a periodical "Bulletin" intended for the same purpose.

The Board of Registration in Dentistry for Massachusetts is composed of the following gentlemen: L. D. Shepard, President, Boston; J. Searle Hurlbut, Springfield; E. V. McLeod, Secretary, New Bedford; G. E. Mitchell, Haverhill; John F. Dowsley, Boston.

The medical editors of the United States held a banquet at the Palmer House, June 6. There were about sixty gentlemen present. The President, Dr. J. V. Shoemaker, read an address on "Some of the Abuses in Medical Journalism," which we will notice hereafter.

Connecticut Valley Dental Society.—The next semi-annual meeting will be held at Windsor Hotel, Montreal, Canada, July 19 to 22, 1887. Profs. Black and Mayr will be guests of the Society, and will present subjects of interest to the profession. Many interesting papers and clinics are promised.

The Chicago Dental Society held a very large and interesting meeting Tuesday evening, June 7. Two papers were read, one by Dr. E. L. Graves on "Capping Exposed Pulp," and one on Pyorrhea Alveolaris, by Dr. A. W. Harlan. Mr. Liggett, of Detroit, exhibited the new electric motor manufactured in Detroit.



The case of *Rosenthal vs. The Ohio College of Dental Surgery* was recently decided by the Supreme Court of Ohio in favor of the College, reversing the decision of the lower court and holding that the capital of the corporation (its real-estate) is not liable for any interest that may accrue on its certificates of stock.

The next meeting of the Southern Illinois Dental Society will be held at Centralia, Ill. (instead of Carbondale, as erroneously reported) on the second Tuesday in April, 1888. President Jennelle appointed Drs. C. B. Rohland, Alton, Chairman; A. D. Finch, Anna, and T. W. Pritchett, Whitehall, as the executive committee.

To avoid drilling through the sides of roots, and to save much distress to a patient, do not use a drill. It is much better to spend a little more time in removing foreign matter, or a root filling, from a canal, than to waste it, in repairing the damage done to a tooth by committing such a blunder. Canals seldom need to be enlarged in order to fill them.

German Association of Natural Scientists and Physicians.—The sixtieth annual meeting will be held at Wiesbaden, Germany, September 18 to 24, inclusive, 1887. Section seventeen of this Association relates to dental science. Communications relating to the coming session should be addressed to M. Dreyfuss, 44 Frankfurter strasse, Wiesbaden, Germany.

Dr. Arthur C. Hugenschmidt, of Paris, France, carried off half of the *Medical News*' prize of \$100 at the late commencement of the medical department of the University of Pennsylvania. Dr. P. J. Martin, of Pennsylvania, was awarded the other half of the prize and his thesis was published in the *Therapeutic Gazette* for May, entitled "The Modern Antipyretics."

Scene in a broker's office.—Seedy looking individual enters and wishes a loan. After some parley he finally receives \$5. As he is about to depart, he reassuringly says to the broker: "I can give you collateral for the loan." Broker.—"Let's see the collat." S. I. thereupon removes a gold-lined set of teeth from his mouth! Broker collapses. Exit tramp with his teeth and the V.

Dr. J. Taft, of Cincinnati, was elected chairman of the section on dental and oral surgery of the American Medical Association at the late meeting held in Chicago. Dr. E. S. Talbot was re-elected secretary. At the first day's session there were about twenty in attendance, and on the second day the number of dentists present had increased to twenty-five. The section is growing.

According to Dr. A. P. Sinitzin, editor of the *Suborachobny Vestnik*, of St. Petersburg, Russia, in 1885, the incomplete official returns of the Government placed the number of the dentists practicing in Russia at 550, and it is his opinion that there are now at least 700 dentists, although those who have the privilege of practicing dentistry, namely physicians and dentists, would number many more than a thousand.

Don Rafael alcade y Burill, the dentist of the infant king of Spain, Alphonso XIII., is expected to visit the royal personage twice a week and perform whatever operations are necessary in the way of cleansing and filling. For this service he receives an annuity of 24,000 francs or \$4,560. *L'Odontologie* says, "inasmuch as the king of Spain is but a few weeks old, the noble alcade will not find many teeth that require filling."

We have received from the S. S. White Dental Manufacturing Co. sample shades of teeth manufactured by them. They are strung on a ring and numbered, so that any shade of tooth may be ordered by designating the number. It is a very convenient thing to have at the office, as it will save much time in cities where dental depots are located, and to the country dentist it will be invaluable. We have found it of great value already.

*The Southern Dental Journal* for April pays the Odontological Society of Chicago the compliment of republishing the little monograph on "the management of pulpless teeth," recently issued. Brother Catching knows when he sees a good thing, and is quick to acknowledge it. From numerous letters received by the REVIEW staff, we feel certain that much good will result from the wide dissemination of the matter to be found in the work.

The minister of the interior and the minister of education in Belgium have been waited upon by a committee of the Odontological Society of Belgium, for the purpose of praying for the establishment of a dental school in that country. It is said that the authorities look favorably upon the project of establishing a dental school in Brussels, rather than to create a Dental Department in the universities, as suggested by the Academy of Medicine.—*L'Odontologie*.

The Missouri State Dental Association will meet at Kansas City, June 21-24 inclusive. It was stated in the last number that the meeting would be held at Sweet Spring, which was an error, the notice being copied from the *Archives of Dentistry*. From private letters we are assured that the executive committee will present an interesting programme, and we hope there will be a large turnout of dentists. The president, Dr. Conrad, of St. Louis, is doing all in his power to make the meeting a big success. Several clinics will be given by prominent operators.

In the *Zahntechnische Reform* (No. 2, 1887) Dr. Wilhelm Herbst, of Bremen, speaks of the injustice of procuring patents on inventions and improvements given to the profession gratuitously by various inventors. The point in question is on the matrices patented in the United States on October 19, 1886, by Dr. Wm. B. Miller. The matrix is identical with one presented before many dental societies in 1885, and described in a pamphlet published by him in October of that year, as also in the above mentioned publication in January, 1886.

Under the law recently enacted in Massachusetts, regulating the practice of dentistry in that State, no provision has been made for the issuance of licenses to graduates from dental schools. The possessor of that highly prized article—a diploma—will have to pass the same examination as those who have not graduated, and while it may not prevent him from practicing in Massachusetts if his diploma is honestly earned, yet some courtesy is certainly due to those whose love of the profession impells them to pass through the arduous period of student life.

At a late meeting of the Chicago Dental Society the following committee on the enforcement of the dental law of the State of Illinois was appointed by the president of the society: Chas. H. Wachter, C. F. Hartt, B. S. Palmer, C. W. Lewis, Louis Ottofy, W. G. Stowell, J. E. Hinkins, L. F. Dayan, A. W. Harlan, and W. B. Smith. Cook County was divided into five districts, two members of the Committee being assigned to each district. We believe that there are no less than thirty or forty persons practicing dentistry at the present time in this county who hold no license from the State Board of Dental Examiners.

Magnesium chloride is proposed as a bleaching agent. Freshly prepared, an aqueous solution is placed in the cavity of a tooth, after the root has been filled, and the chlorine is liberated by decomposing it with electricity. This method of bleaching a tooth is likely to come into favor with all dentists who use electric motors, pluggers and engines. After the bleaching has been done, distilled or spring water is used to wash out the cavity, the walls are then to be painted with copal-ether varnish, and the interior of the cavity is filled with the desired shade of oxychloride, and the operation completed at one sitting by filling with gold.

AMERICAN DENTISTS IN GERMANY.—The department of state has been informed by the United States Consul General at Berlin of the issuance of an order by the police authorities of that and other German cities reciting the decisions of the royal privy court, establishing the principle that dentists who have received diplomas in foreign countries can only assume their title in Germany upon having secured a certificate of qualification from the board of examiners of the German Empire, and requiring all persons to abstain, under penalty of the law, from the use of the designation, "American dentist," in connection with the title of doctor.

We notice in the dental law just approved by the governor of Massachusetts, that persons without diplomas have the option of an oral or written examination. This will render it necessary for the board to carefully write out the questions, and note at the time of answering how nearly the candidate has complied with the intent of the examiner in extracting information. We do not believe in oral examinations as a test of the fitness of a candidate to practice dentistry or medicine, as candidates for degrees or licenses, are very likely to gain from the examiner what kind of an answer will be acceptable, in spite of the adroitness of the questioner.

Very recently the city of Paris "accorded a building to the Ecole et Hôpital Dentaires de Paris" for their use. The school was in need of larger quarters, finding the rooms at 23 Rue Richer too cramped to accommodate the largely augmenting classes. To our American readers it may seem incredible that prior to 1880 there was no dental college in Paris. Now there are two, the above school and the "Institut Odontotechnique," which was founded at a later period. From what we know, we are certain that the native Frenchman need not any longer come to America for his dental education, as the "Ecole Dentaire de Paris" now rests on a secure foundation, and we congratulate the directory and teaching staff on the brilliant outlook for the future.

We have received from Dr. C. F. Hartt, of Chicago, a syringe for filling root canals with chloro-percha, consisting of a small German-silver syringe with fine gold-points of different shapes and sizes. The body of the syringe is filled with the chloro-percha and the points kept in a wide-mouthed bottle in chloroform to prevent clogging. When required, all that is necessary is to select the point desired, attach to syringe and inject into the root-canal the amount needed to completely fill. It is hoped that in this way much time and labor may be saved the operator. There is no doubt that an invention of this kind will prove of great value to the profession, if the points can be made fine enough to pass to the apex of the root, and we trust that the gentleman will continue until he has perfected it.



From the Fourth Annual Report of the Board of Dental Examiners of Iowa, just published, we glean the following interesting figures :

Population of Iowa census, 1885.....	1,753,980
Number of dentists April 25, 1887.....	398
Ratio of dentists to population 1 in.....	4,400
Number of graduates in Iowa when law was passed March 8, '82,	32
Number of graduates practicing in Iowa April 25, 1887.....	103

The Secretary reported that fifty cases of violation of the law respecting the practice of dentistry were brought to the notice of the Board, of whom nearly all were suppressed, removed from the State or otherwise discontinued to infringe. At present, not more than four persons are practicing in the State in violation of law.

We present the following as a unique style of advertising in Chicago: Medical and Dental Card.—Beautiful plates of teeth, \$5.00 to \$7.00; teeth extracted without pain, 25c to 50c; teeth filled without pain, 50c to \$1.00; nerves killed without pain, 25c to 50c. Teeth but mere shells saved and filled. All kinds of very best preparations for curing the diseases of the mouth or gums, or for filling, cleaning, saving or beautifying the teeth, or for curing toothache. Sold at the low price of 25 cents per bottle or package. Agents wanted—male or female. Teeth beautifully cleaned and burnished. All diseases of the mouth and gums, scurvy, ulcerations, abscesses, tumors, bleeding gums, etc., promptly cured. Being one of the regular physicians of the State engaged in the practice of medicine, surgery and dentistry for over forty years—I am, in connection with my dental practice, successfully treating all old complaints of men, women and children, that can be treated at my office. ———, M. D., Painless Dentist and Surgeon.

VULCANIZED RUBBER.—The question of discovery of the hardening property of rubber, when mixed with sulphur, is still disputed. The death of John Rider, in New York, on March 25th last, brings it up again. In the early days he engaged in the rubber business and contested with Goodyear & Co. the right both claimed as inventors of the process of vulcanizing India rubber. The way in which the process of vulcanizing rubber is said to have been discovered by the Goodyears was told some years ago by John Dixon, one of Goodyear's employes. The men had a habit of chewing rubber much as the modern school-girl chews gum. One day while Dixon and an Irishman were carrying some rubber on an iron hand-barrow to the oven, the Irishman was taken with a fit of coughing as he passed a barrel of sulphur and involuntarily spat out his rubber end. It fell into the barrel. Setting down the barrow he made a grab for it and recovered it. The sulphur, however, adhered to its moist surface, and he threw it down with an expression of disgust. It fell upon the barrow and was put into the oven with it. When the barrow was taken from the oven Dixon saw that the little piece of rubber had assumed a new appearance. He examined it carefully, and became convinced that he held in his hand the key to the discovery Mr. Goodyear had been searching for. He took the little thing to Mr. Goodyear, who, when he saw it became much excited. Dixon told him the circumstances under which the change had been effected, and Mr. Goodyear set his son and Dixon at work experimenting. It was several months before they succeeded, but they finally learned the secret of making vulcanized rubber.

Any of the following named duplicate copies of dental journals will be sent FREE on receipt of the necessary postage, to any address, *provided* that the num-



bers are desired for the purpose of completing files in the offices of dentists, the libraries of dental colleges or dental societies. Address Louis Ottofy, D.D.S., 1228 Milwaukee avenue, Chicago, Ill., U. S. A. Dental Cosmos: Vol. xviii, No. 3, 1876; Vol. xix, Nos. 11 and 12, 1877. Vol. xx, Nos. 1, 2, 8, 9, 10, 11, 12, 1878; Vol. xxi, Nos. 1, 3, 6, 9, 11, 1879; Vol. xxii, No. 8, 1880; Vol. xxv, No. 12, 1883; Vol. xxvi, No. 1, 1884. Johnston's Dental Miscellany: 1877, Vol. 4, Nos. 47 and 48: 1878, Vol. 5, Nos. 51 and 52: 1879, Vol. 6, Nos. 61, 67, 72: 1880, Vol. 7, No. 83. Amer. Journ. of Dent. Sc., 3d series: Vol. 12, Nos. 7, 8, 9; Vol. 13, Nos. 1, 2, 3, 5, 11; Vol. 14, No. 7; Vol. 15, Nos. 6 and 7. Items of Interest: Vol. vii, 1885, Nos. 3, 4, 5, 10. Archives of Dentistry: Vol. i, 1884, Nos. 2, 3, 4, 5, 6, 11, 12; Vol. ii, 1885, No. 2. Missouri Dental Journal: Vol. ix, 1877, No. 5; Vol. x, 1878, No. 11; Vol. xii, 1880, Nos. 1, 6, 7, 8, 11, 12. Ohio St. Journal of Dent. Sc.: Vol. i, 1881, No. 2; Vol. ii, 1882, No. 5. Caulk's Dental Annual: Vol. i, (second ed.), 1883-4; Vol. ii, 1884-5. Dental Advertiser: 1879, Vol. x, No. 1; 1880, Vol. xi, No. 2. Dental Practitioner: 1883, Vol. i, No. 7. Dental Register: 1881, Vol. xxxv, No. 9; 1884, Vol. xxxviii, No. 2. Independent Practitioner: 1881, Vol. ii, Nos. 1, 7, 8, 10, 11; 1883, Vol. iv, No. 4; 1884, Vol. v, No. 2. Dental Jaius: 1880, Vol. i, No. 12; 1881, Vol. ii, Nos. 5, 9, 10, 11; 1882, Vol. iii, No. 4. Monthly Rev. of Dent. Surg.: 1878, Vol. vii, Nos. 11 and 12; 1879, Vol. viii, Nos. 1, 2, 5, 6, 7; 1880, Vol. ix, Nos. 3, 5, 6. British Journ. of Dent. Sc.: 1878, Vol. xxi, Nos. 264, 268, 269; 1883, Vol. xxvi, No. 366.

INTERNATIONAL MEDICAL CONGRESS—DENTAL SECTION.—REPORT OF PROFESSOR TAFT, AS CHAIRMAN OF THE DENTAL AND ORAL SECTION, TO THE EXECUTIVE COMMITTEE OF THE INTERNATIONAL MEDICAL CONGRESS, CHICAGO, JUNE 6, 1887.

In the organization of section seventeen there have been appointed sixteen American and ten foreign vice-presidents, two American secretaries and four foreign secretaries, and thirty-five councilmen. The secretaries appointed are: One for France; one for Sweden, Norway and Denmark; one for Germany; one for England. This seemed to be desirable, in order that the interests of the section might be looked after efficiently, and with proper regard to these different countries.

About fifty papers upon various subjects pertaining to dental and oral surgery and medicine have been promised, about thirty of which have been placed in the hands of the secretaries of the section, and others are coming daily. From the whole number which may be forwarded, such a number as can be read before the section will be selected and arranged for use, the titles or abstracts of which will be placed in the hands of the secretary-general at the earliest practicable time. Preparations have been made for a series of clinics and practical work, illustrating the present status of this department, in which eminent men in dental surgery in Europe and America will engage. Arrangements are being made for a microscopical department, in which the attainments in dental histology and morphology will be presented, as well as demonstrations illustrating the methods of attaining these results. Committees have been appointed to carry out the work indicated above, and also to solicit money to defray the special expenses of the section.

A committee of reception for this section has been appointed. Its business will be to welcome the foreign guests and visitors and facilitate their introduction to and acquaintance with the members of the section of this country, and promote the social features of the occasion. Ample accommodation for the meeting of the section and the work proposed to be done have been secured in Washington.

## THE STATUS OF DENTISTS IN THE AMERICAN MEDICAL ASSOCIATION.

Be sure and read this carefully, as it is a new departure and opens the doors of medical societies to dentists.

*“Resolved*, that the regular graduates of such dental and oral schools and colleges as require of their students a standard of preliminary or general education and a term of professional study equal to the best class of the medical colleges of this country, and embrace in their curriculum all the fundamental branches of medicine, differing chiefly by substituting practical and clinical instruction in dental and oral medicine and surgery, in place of practical and clinical instruction in general medicine and surgery, be recognized as members of the regular profession of medicine and eligible to membership in this association on the same conditions and subject to the same regulations as other members.”

Dr. Davis, in introducing the resolution, said he wished to explain its object. There are two objects to be had in view: first to relieve a degree of embarrassments that exists between the regular profession, as we consider it, and the profession of dentistry. The department of dental and oral surgery is a part of the profession of medicine as much as the department of ophthalmology or otology, or any other ology. Our teeth and mouths are a part of our system as much as any other part, and are used more than any other part. The embarrassment is this, that in the history of the development of dentistry it originated mostly in mechanical operations. Steadily it has advanced, and in years gone by—quite a number of years ago—our lamented S. D. Gross made a proposition that an oral and dental section be provided as a section in this association. It was seconded by Dr. Sayre and myself, and it was organized. The International Medical Congress of 1881 provided a section for dental and oral surgery. The congress to be held in Washington has done the same thing, and it will be one of the most thorough and best organized sections in the congress. There is an embarrassment in this respect. It is to know just who and by what line of demarcation those engaged in that department shall be recognized as members of the regular profession. Now it is proposed to make a line and draw it where this resolution says that all those who are qualified by general education and a course of study equal to that of the best medical colleges, a curriculum embracing the entire fundamental principles of medicine, with the provision that, instead of special instruction in clinical surgery, instruction may be had in dental and oral surgery, such shall be recognized as members of the profession of medicine. It will take away a sort of embarrassment. There is a more far-reaching and more valuable underlying object in this resolution, and that is that to be recognized as a member of the profession, if this resolution is adopted by this body, they must have the education received in schools that require these requirements, it makes a strong lever to lift up the course of study in the dental schools. Such are my reasons for bringing up the resolution. I will say nothing more on the subject.

The motion was made that the resolution be adopted by the association, and it was carried unanimously.

# A PHARMACEUTICAL SPECIALTY FOR DENTISTS. LISTERINE.

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**FORMULA.**—Listerine is the essential antiseptic constituent of Thyme, Eucalyptus, Baptisia, Gaultheria and Mentha Arvensis, in combination. Each fluid drachm also contains two grains of refined and purified Benzo-boracic Acid.

**DOSE.**—Internally: One teaspoonful three or more times a day (as indicated), either full strength or diluted with water, or in combination with other drugs. As a local application to ulcers, wounds and abscesses, or as a gargle, mouth-wash, inhalant or injection, it can be used ad libitum, diluted as necessary for varied conditions.

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Antiseptic, Prophylactic, Deodorant, Non-Toxic, Non-Irritant, Non-Escharotic, Absolutely Safe, Agreeable, Scientific, and Strictly Professional.

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**L**ISTERINE is a well-proven antiseptic agent—an antizymotic—especially adapted to internal use and to make and maintain surgical cleanliness—asepsis—in the treatment of all parts of the human body, whether by spray, irrigation, atomization, or simple local application, and therefore characterized by its particular adaptability to the field of preventive medicine—individual prophylaxis,

AND THE REQUIREMENTS OF GENERAL

## DENTAL ✦ PRACTICE

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LISTERINE IS A  
Perfect Tooth and Mouth Wash,

NON-SECRET AND PROFESSIONAL,

And therefore has received the Highest Recognition as the Best General Antiseptic for a  
**DENTIST'S PRESCRIPTION.**

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Dentists interested in LISTERINE will please send us their address, and receive by return mail, post-paid, our new and complete pamphlet of 36 quarto pages, embodying

**A TABULATED EXHIBIT** of the Action of LISTERINE upon inert Laboratory Compounds;

**FULL AND EXHAUSTIVE REPORTS** and Clinical Observations from all sources, both Medical and Dental, confirming the utility of LISTERINE as a general Antiseptic for both Internal and External use; and particularly

**MICROSCOPIC OBSERVATIONS**, showing the comparative value and availability of various Antiseptics in the treatment of Diseases of the Oral Cavity, by W. D. Miller, A. B., Ph. D., D. D. S., Prof. of Operative and Clinical Dentistry, University of Berlin, from whose deductions LISTERINE appears to be the most acceptable prophylactic for the care and preservation of the teeth.

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"1000 Fine" *Soft Gold Foil*. Very soft and easily worked, adapting itself readily to the walls of the cavity, yet tough and strong. Can be made cohesive by heating. Supplied in Nos. 2, 3, 4, 5, 6, 10, 20, 30, 40, 60, and 120.

"1000 Fine" *Cohesive Foil*. For use cohesively only, and will be found to contain that quality sufficiently for most cases as taken from the book; can be made more cohesive by heating. Supplied in Nos. 2, 3, 4, 5, 6, 10, 20, 30, 40, 60, and 120.

"1000 Fine" *Unannealed Gold Foil*. This is put up just as it comes from the beaters' skins. Many operators prefer this Foil, which they use cohesively, believing that it works more kindly and becomes more cohesive if annealed but once—just before it is used. Supplied in Nos. 3, 4, 5 and 6.

"1000 Fine" *Rolled Gold, Cohesive*. For finishing surfaces, contours, etc. Prepared entirely by rolling. Supplied in Nos. 20, 30, 40, 60, 120, and 240.

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"1000 Fine" Corrugated Soft Gold Foil. }  
 "1000 Fine" " Cohesive Gold Foil. }

These are the regular "1000 Fine" Foils, with the addition of a beautifully corrugated surface, which in many operations facilitates rapid work. We would call special attention to the surface of these Foils, as we believe it to be better than that of any other corrugated foil in the market.

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Prices for all varieties of "1000 Fine" Gold Foil.

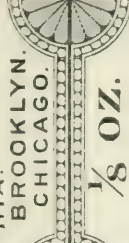
1/2-OZ.....	\$ 4 00	1-OZ.....	\$30 00
1-OZ.....	15 00	2 ounces at one time...per oz.	29 00

For all numbers except No. 2, which is \$2.00 per ounce extra.

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These Cylinders, introduced in 1884, quickly met with approval. The ordinary way of welding gold cylinders to prevent their unrolling is by heating the free end. This has a tendency to harden that portion of the cylinder, thus rendering the mass uneven in texture. By our peculiar process of cold-welding this defect is entirely overcome and the cylinders are homogeneous.

"1000 Fine" Cold-Welded Soft Gold Cylinders. Soft and very adaptable, but sufficiently cohesive when heated.

Sizes 1, 2, 3, 4, 5, 6, and assorted.  
 "1000 Fine" Cold-Welded Cohesive Gold Cylinders. Although cohesive, they are readily adaptable, and very rapid work can be done with them.

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PRICES.

1/2-OZ.....	\$ 4 00	1-OZ.....	\$30 00
1-OZ.....	15 00	2-OZ. at one time.....per oz.	29 00

**THE S. S. WHITE DENTAL MANUFACTURING CO.,**

PHILADELPHIA, NEW YORK, BOSTON, CHICAGO, BROOKLYN.

# PORCELAIN TEETH.

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Extract from the General Report of the Judges on awards of Group XXIV., Centennial, 1876.

"H. D. Justi EXHIBITED NOTHING BUT TEETH, but his display was beautiful in the extreme. In color, translucency and texture, they were all that could be desired; they were a faithful reproduction of the physiological characteristics of the natural organs, both to the individual teeth and relatively to the entire set. Their conformation with reference to close and easy adaptation to the maxillary arch showed careful study of the needs of both patient and operator. Their various and numerous deviations from uniformity of arch and outline, simulating the irregularities of nature, were so perfect that when in the mouth no suspicion of their artificial nature would be entertained. The disposition of tooth-material was so skillfully managed as to secure the greatest amount of strength with the least bulk; and the insertion of platinum pins was so arranged as to render their displacement an almost impossible accident."

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H. D. JUSTI,

Branch, No. 66 E. Madison Street, Chicago.

Principal Depot, No. 1301 and 1303 Arch St., Philadelphia, Pa.

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## H. D. Justi's Superior Insoluble Cement.

This CEMENT is highly appreciated by the profession. It is especially recommended for CROWN and BAND WORK. It is NON-IRRITANT, and permanently resists the acids of the mouth. Made in four different colors.

No. 1.  
LIGHT.

No. 2.  
MEDIUM.

No. 3.  
YELLOW.

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BLUE.

# THREE MORE MEDALS IN 1886.

The recent International Expositions at Edinburgh and Liverpool, and the American Institute, New York, have each awarded us the Highest Silver Medal, which swells our list to about **Thirty-five Gold, Silver and Bronze Medals** from all parts of the world.

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## SEABURY & JOHNSON,

Beg to call attention to the articles manufactured by them especially adapted for dental use.

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Is made with great care, by perfected machinery, of which process **WE ARE THE SOLE OWNERS AND OPERATORS IN THIS COUNTRY**, and our product is guaranteed to be fluffier and lighter than any other make.

## DENTAL ABSORBENT COTTONS

Borated, Salicylated, Styptic and all other Medications. Perfect quality, highly absorbent, superior to all competitive brands.

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Order of dealers or directly from us.

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We would also direct your attention to

## HYDRONAPHTHOL

The new Antiseptic Disinfectant and Preservative. It is Odorless, Non Poisonous, Non Corrosive, and Tasteless. Is freely soluble in Alcohol, Ether, Benzol, Glycerine, and Fixed Oils. Is twelve times as efficient as Carbolic and three times as potent as Salicylic Acid. It is Anæsthetic and Soothing in its local effects, hence is especially recommended for treating sensitive Dental Cavities, Abscesses, etc., etc. **HYDRONAPHTHOL** can be had incorporated in our Absorbent Cotton, Bandages, Jute or any desired Surgical Dressing that can be rendered Antiseptic.

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ESTABLISHED 1877.

The illustration shows five cans of Caulk's Diamond Cement arranged in a row. Above the cans is a diamond-shaped logo with the words "TRADE DIAMOND MARK". The cans are labeled as follows from left to right:

- GRAY.** Labeled "AND OTHER DENTAL PURPOSES." and "EXCELLENT FOR LINING CAVITIES."
- YELLOW.** Labeled "EXCELLENT FOR LINING CAVITIES."
- LIQUID.** Labeled "MOUNTING ARTIFICIAL CROWNS."
- MEDIUM.** Labeled "FOR FILING TEETH."
- LIGHT.** Labeled "FOR FILING TEETH."

Each can has "CAULK'S DIAMOND CEMENT" written vertically on its side. Below the cans, the following text is printed:

FOUR COLORS and LIQUID.—Gray, Yellow, Medium and Light \$2.00 per Pkg.  
 TWO COLORS and LIQUID.—Gray and Yellow, . . . . . 1.50 " "  
 ONE COLOR and LIQUID.—Gray, Yellow, Medium, Light or Gum, 1.00 " "

**THIS COMPOUND STANDS WITHOUT A RIVAL.**

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# THE DENTAL REVIEW.

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## ORIGINAL COMMUNICATIONS.

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### PULPLESS TEETH AND THEIR TREATMENT.

Read before the Chicago Dental Society May 1887.

BY GEO. H. CUSHING, CHICAGO.

In view of the fact that so much has recently been said and written upon the subject assigned to me for this evening, it would seem as though there could be no occasion for anything further being said relative to it now. But our daily experience shows us the importance of bringing it before our minds—again and yet again—with “line upon line and precept upon precept” in order if possible to secure a more universally successful practice than now prevails. There is hardly a day passes but that some of us witness the deplorable effect of ignorance or culpable negligence in this line of practice, and while this is so, it will be incumbent on us to discuss and re-discuss the subject till both ignorance and apathy concerning it are dispelled.

It is not proposed nor would it be desirable here, to attempt an exhaustive study of the subject, and this paper will only endeavor to emphasize some of the more important points which should be observed in order to insure success, and to try and indicate the more frequent causes of failure in the treatment of pulpless teeth.

Pulpless teeth are not necessarily *dead* teeth. They are frequently so miscalled, however, and the miscalling leads to a misconception of their true conditions. The destruction and removal of the pulp of a tooth results primarily in simply depriving

the dentine of its chief or perhaps only source of nourishment. It does not at all affect the integrity of the tooth as to its connection with the jaw, or as to the nourishment of the cementum whereby that integrity is maintained. If then, after the pulp is destroyed and removed, the tooth can be put in such condition as not to provoke disease of the parts with which it is intimately associated, it may reasonably be expected that it will be retained as a useful member for very many years or even through a long life time. This being accepted as true, the first and most important inquiry is, what is the source of diseased conditions attending pulpless teeth, which do not show themselves in connection with those having living, healthy pulps. There can be but one answer to this question, viz.: that septic matter contained within the pulp chamber or canals furnishes the sole irritating cause resulting in pericementitis, alveolar abscess, necrosis of the alveolar process, and sometimes of large areas of the maxillary bones. This can not be too strongly and persistently impressed upon the minds of the younger men (particularly) of the profession, though many of the older members would do well to give this fact greater consideration than they seem to do, for this is the very key-note of the problem of successful treatment.

Obviously then, the first step in the treatment of such teeth is the removal from the pulp chamber and canals of all septic matter. This, of course, renders them aseptic, and of course employs in its accomplishment some of the various methods of disinfection.

To secure this condition, what then are the very important points to be considered. First, the isolation of the tooth to be treated, by means of the rubber dam or napkins. Second, the use of properly adapted instruments for the removal of the contents of the pulp chambers and canals, and last, but not least, the thorough disinfection of all instruments before using.

While it is possible that teeth treated with but slight regard to the above requirements may sometimes give but little trouble, yet the neglect of any one of these prime factors may render treatment tedious and difficult, which would have proved brief and simple had they been strictly observed, and such neglect may, and sometimes does result in most disastrous consequences.

This aseptic condition, having once been secured, the next consideration must be to render it permanent.

It is self-evident that if all septic matter is removed from the canals and pulp chamber, and they are then filled with an indestructible material which can not be penetrated by moisture or by septic matter or gases, and does not carry contamination with or before it, the tooth must then indefinitely maintain its integrity as far as the conditions under consideration are concerned.

The point most important to be next considered is the introduction of the material with which the canals are to be permanently filled. Fortunately we have in gutta-percha a material that may be made to fill all canals with approximate perfection. This should be introduced with the greatest care so that the apical end of the roots may be perfectly closed. There should be no hurry about this part of the operation, but ample time should be taken to insure the desired result. The solution of gutta-percha in chloroform of the consistence of thick cream should be used at first and pumped in till there is assurance that it has reached the apical foramen. This should be done with smooth broaches adapted to the size of the canals. Gutta-percha cones should then be used where practicable, and they should be thoroughly packed. In very diminutive canals, or those of difficult access, small gold points filed to fit such canals (as suggested by Dr. Wassall) should be used; after the solution has been well worked in, they should be forced as far into the canals as possible without extending beyond the foramen. They act as wedges to force the gutta-percha to its place, and are useful where nothing else could be used.

The above briefly are the points to be kept prominent in our minds, and a faithful working out of details under them can not fail of success.

Now a review of the most frequent causes of failure would seem to be unnecessary after having indicated the most important points to be observed essential to success, because it is obvious that a neglect of some one or all of the essentials claimed must be the cause of failure in almost all cases, yet it may be profitable to dwell upon them for a moment that we may be fortified against the temptations to careless methods which so often

present themselves in the course of treatment of this class of cases.

The most potent cause of failure undoubtedly arises from a want of thorough comprehension of the first proposition laid down at the outset of this paper, viz.: that all these troubles arise from septic poisoning, and, in connection with that, of the failure to understand what disinfection really is. It seems to be impossible for some minds to grasp the idea that all the troubles which we so frequently see in connection with pulpless teeth can arise from a septic poison. The cause to such minds not being tangible is beyond their mental grasp as well, and while nominally accepting the theory, they say by their actions that they do not believe the cause to be as stated. Such a lack of confidence in the fundamental premise must of necessity beget carelessness in the methods pursued, which inevitably leads to bad results.

Again, the want of confidence in the premises here laid down is the result of neglect to study the subject by those who would fully comprehend it if they chose to apply their minds to it.

Indifference again as to the results comes sometimes from a feeling that the compensation to be received will not justify the time and trouble necessary to the accomplishment sought. Fortunately such ignoble motives are not often found actuating half-way reputable men.

But the chief causes of failure after these, are to be attributed to a lack of thoroughness in performing the details of the necessary operations. This will often be found to occur with those who are well posted, and who endeavor to do and think they are doing the very best that can be done. One man will fail to remove all the debris—while believing he has done so most thoroughly—another will remove most perfectly the contents of the canals, but fail to thoroughly disinfect them before filling, while still another may perform the first two steps in the most admirable manner and yet fail most sadly to properly fill the canals.

Men's minds are so differently, and I might say curiously constituted that all these errors will sometimes occur at the hands of men regarded as scientific, and who would be supposed to be thorough in all their methods.



A celebrated man, one who is high authority in the scientific world—and justly so too—was observed to test the mouth with litmus paper which he held between his naked fingers. Conclusions drawn from such observations could hardly be valuable. If such men sometimes pursue unscientific methods, it is not to be wondered at that among those less highly educated such practices will occasionally occur.

This brief summary of the points essential to be observed to insure success on the one hand, and the dangers and errors to be avoided on the other, evidently can lead to but one conclusion, viz.: the importance of a thorough comprehension of what is needed to be done, and a practical training which shall evolve the skill necessary for its performance. This can come only from free discussion and clinical demonstration and practice.

It is hoped that the former may be induced by what has been suggested herein, and that such details as may be profitably considered here, and which were purposely avoided in the paper, will be introduced in the discussion which may follow. While the clinical teaching which should supplement the theoretical may be furnished hereafter, as it has been intimated that plans for a regular series of clinics are in contemplation.

Believing that this subject can not be too fully discussed, and with the hope that what has been said may stimulate some at least to a more earnest study of this most important subject, the paper is left in your hands.

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### IMPLANTATION:

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

The replacement of lost natural teeth in numbers from one to ten in either jaw may be accomplished in several ways. In some instances the entire tooth or teeth may be lost, while in others only the crowns are absent, the roots being intact, and again both classes may be present in the same subject. Various methods for the purpose of replacing these organs may be resorted to, and the indications presented, with the surrounding circumstances and other conditions, will guide the practitioner as to which method

should be employed. In those cases where roots are present, replacement of a part of the denture may be accomplished by one of the following means:

1. Artificial crowns, carrying one, two, and sometimes three crowns attached to one root.

2. Removable bridges, requiring one, two or more roots and carrying from two to fourteen teeth.

3. Permanent bridges, requiring two or more roots and carrying from two to fourteen teeth.

In those cases where roots are entirely absent replacement of a part of the denture can be accomplished by one of the following means:

1. By plates held in position by clasps fitted to adjoining natural teeth.

2. By plates held in position by atmospheric pressure.

3. Replantation.

4. Transplantation.

5. Implantation.

All of these operations, when measured by a scale in which a lifetime corresponds with permanence, are of a temporary nature. They may be considered temporary by viewing them from two standpoints:

They are temporary when compared with the life of the individual, and they are temporary when compared with the life of the natural and healthy teeth.

This article is to deal principally with the subject of Implantation, and a comparison will be attempted—a comparison which is believed to be favorable to Implantation—with other methods of replacing natural teeth. It may be sincerely regretted that such wholesale and uncalled for opposition should be exerted to the *trial* given to the operation by members of the dental profession. No one should permit himself to become so enthusiastic, or to be carried away so far from a true scientific platform as to declare the operation of implanting dead teeth in the living jaw, connecting them with living organisms as permanent, until it be so proven. To-day proof is still wanting. Implanted teeth have been in the mouth (up to the date of this publication) not over two years and one-third, a time hardly sufficient to permit of declaring any operation or method permanent. On the other hand,

those who have practiced transplantation and replantation, when they bathed the teeth "in five per cent solution of carbolic acid," should not be too anxious to condemn this entirely different operation at so early a stage.

Whether this operation, performed as it now can be under the antiseptic precautions of modern surgery, shall prove successful requires time to demonstrate. It certainly is not to be questioned that in certain cases for the time being perfect success has crowned the efforts of the operator, and it remains for the future to tell whether the length of time during which the tooth remains implanted and of good service is correspondingly sufficient to justify the loss of time, infliction of pain, etc., occasioned during the operation. The fact that a great many who know nothing about the healing process, the method of attachment, the effect of perfect antisepsis on the tooth implanted, doubt "in their own minds" that the operation may be successful, should deter no one possessed of average skill to test the question for himself. The mistake, however, of expecting such cases to prove serviceable when performed under unfavorable circumstances, with improper instruments, carelessly treated tooth and the general neglect of all ordinary precautions, is absurd. Not only is such a delicate operation to be performed step by step by the employment of all care and utmost precaution, but the selection of the patient as to health, age and all conditions liable to affect the results, should be carefully considered.

In how far Dr. Younger, of San Francisco, deserves credit for introducing this operation is just now an interesting question to determine; also, whether the idea of forming an *entirely* new socket in the alveolus is Dr. Younger's, because it is to that and to the intelligent and thorough application of antiseptic treatment, as now understood, that the success of the operation is due.

In Volume XXI, No. IV, October, 1881, of the *Deutsche Vierteljahrsschrift für Zahnheilkunde*, pp. 417-419, occurs the following in the report of discussions before the Central Association of Dentists held at Heidelberg, August 2, 1881:

Question 1 is as follows: Are there positive indications for the replantation of teeth?

M. Witzel.—"Gentlemen, before endeavoring to reply to that question I wish to submit to your examination several casts. They

are two casts of a lady's teeth. She is fifty years of age, and in her case I *replanted* an incisor which had been diseased, and *implanted a dead incisor*. After a careful examination of the clear and distinct casts you will be unable to distinguish which is the trans- and which the implanted member. The arch, as shown by the casts, is normal and possesses healthy alveoli, whose prominences are plainly distinguished, and by which it may be seen that the dead tooth is also firmly attached. The gums surround the teeth alike, and the results of the operation are such *that dentists who have seen the patient could not distinguish the implanted dead tooth from the living ones*. Such results again lead to the question: Are there positive indications for the replantation of teeth? M. Herbst has materially simplified the treatment of replanted teeth by the introduction of his very useful rubber-dam ligature, and I believe that the question of *tooth implantation*, which was first scientifically observed by Dr. Mitscherlich, is now again open for discussion.

"The most disagreeable procedure in the treatment of implanted (or transplanted, as *Mitscherlich* designates the *implantation of dead teeth*) is the use of the *gutta percha shield* recommended by him, and which the patient is obliged to wear for from four to six weeks, thus covering and protecting the implanted tooth. This covering, under which the gums and soft tissues usually become inflamed, is made useless by the one recommended by M. Herbst. It does not interfere with the patient and need be worn but eight days, for by that time, if the operation proves successful at all, there will be sufficient attachment formed by the gums to retain the tooth in position. A further advantage of this bandage is found in the fact that the patient is enabled to cleanse the surfaces covered by the rubber-dam with a camel's hair brush dipped in alcohol, hence the chances for success are materially increased, as the inflammation which almost invariably follows the use of the *gutta percha shield* is entirely obviated.

. . . M. Sauer . . . does not believe the transplantation of dried teeth rational. The speaker mentions a case of transplantation occurring in his own practice, in which he replaced a lower right molar by an upper bicuspid. As the molar had been missing for some time M. Sauer was obliged to make a new alveolus with the use of the dental engine (certainly a heroic



undertaking, *German Editor*) and in this the tooth was fastened. The tooth apparently became firm; the patient, a young medical student, exhibited it freely. The frequent ocular and manual examination to ascertain the nature and extent of the attachment finally caused the tooth to drop out."

If this case of implantation performed, and at the time so-called by Prof. Sauer, of Berlin, Germany, and reported in 1881, had been successful, Dr. Younger's right of priority might be questioned, for Prof. Sauer's is identical with that of Dr. Younger.

Recently Dr. Bogue, of New York City, said: "I was also informed in Paris, two years ago last winter, that a certain gentleman several years previously had gone so far as to implant teeth into sockets artificially prepared by himself, which teeth had been taken from a patient in an adjoining room; that those teeth were deprived of their pulps, the roots filled, the teeth and sockets antiseptitized, and every precaution known to modern dental science observed; that the teeth became firm, remained so for over a year, and then gradually loosened from absorption of the roots, and at the end of two years there remained but one of all that were implanted."

Dr. Bing is credited with having been the operator, and while this information comes indirectly, it can not be determined with certainty whether the cases were in reality true cases of implantation. I have written to Dr. Bing for definite information on the subject. The point of similarity in this case lies in the formation of the new socket, for Dr. Bing took precaution to secure freshly extracted teeth—a procedure which, perhaps, is unfavorable.

A slight error as to the method of retaining implanted teeth in the alveoli, until attachment has taken place, came to my notice recently. On page 23 of the *Archives of Dentistry* for January, 1887, appears an article by Dr. Fuller, of St. Louis, the report of a case of replantation, the rubber dam is recommended for the purpose of retaining the tooth in position. The editor in commenting on the subject joyfully concludes by saying that "this is a new feature, and we think superior to any means heretofore used for the retention of the teeth in similar cases." With all due respect for these gentlemen, it may nevertheless be stated that the same appliance for the same purpose was used and recommended by our ingenious confrère Dr. Wilhelm Herbst, of Bre-

men, as long ago as 1881. As of interest in this connection we quote from the *Deutsche Vierteljahrsschrift für Zahnheilkunde*, No. II, Vol. XXI, April, 1881, page 172: "A simple bandage for replanted teeth."

"M. Herbst showed a bandage employed by him to retain implanted teeth *in situ*. Since December, 1879, he replanted twenty-two teeth, and all of them, without exception, are at this time (August, 1880) successful. He attaches much importance to his method of operating, and believes that there is a future for its success. It is well known that frequently much difficulty is encountered in retaining a replanted tooth in position, and for this purpose he has recently employed a very simple bandage. If, for instance, a lateral incisor is replanted on the left side in the upper jaw, select a small strip of rubber dam, punch holes for the central incisor, canine and first bicuspid, and fasten it to the necks of the teeth in such a way that a cup is formed to enclose and hold the lateral incisor in position. . . ."

This is illustrated with cuts showing the rubber dam with the holes punched in it and its application to the case.

"There is nothing new under the sun," the editor of the *Archives* perceives, and Dr. Fuller's suggestion is questioned by authentic priority. Dr. Younger, no doubt, is entitled to the credit of taking advantage of the most recent discoveries in micrology and the application of asepsis thereto, but beyond this, evidently, implantation was first practiced by others.

Just in how far those cases of our trans-Atlantic confrères are successful as viewed by the light of the years now passed over them, it would be interesting to know; certain it is that the two most essential, in fact the two cardinal points on which success of implantation depends, namely: 1st, Thorough aseptic treatment with a powerful germicide, like the bichloride of mercury, and the retention of the tooth in moisture, and the temperature of the body, for some time before implantation; and 2nd, careful protection of the root from any injury whatever—may have been entirely ignored.

No comparison between the operation of implanting a tooth and its prognosis and the trans-or replantation of teeth should be made. The circumstances and conditions attending each operation are so dissimilar that no just comparison is possible. Nor can

the probable future of an implanted tooth be even approximately predicted by the failures or successes attending the other class of operations. The most prominent question before the profession in reference to this subject is embodied in these words: Is the implantation of teeth justified in certain cases presented to the practitioner? The reply will be heard in about five years. Patients who have worn pivot teeth for years, which pivot teeth were replaced by artificial teeth attached to plates held in position by atmospheric pressure, and who have recently undergone the operation of implantation, claim that in preference to the wearing of a plate they would submit to implantation once every three to five years. It may be unhesitatingly stated that the giving of a fair, unprejudiced trial to the operation, irrespective of what "any one may think about it in his own mind," is proper practice, justifiable, and will sooner or later separate truth from error, clear up clouded ideas, establish new principles, and in every way further the interests of true science.

The instruments specially made for the operation are manufactured according to suggestions of Dr. Younger, of San Francisco, Dr. Walker, of New York, and Dr. Rollins, of Boston. They consist of one tubular knife, two spiral knives, three reamers and five trephines, or eleven in all; of which the two spiral knives, two reamers (Nos. 1 and 3), three trephines (Nos. 1, 3 and 4), seven in all, are sufficient. In addition to these instruments such burs and drills as every dentist has, can be used. But none of them are entirely satisfactory, the good points of each suffer by some unfavorable objection. By a careful study of all of them, I have devised an instrument in which, I believe, all the favorable points are united while nearly every objection has been eliminated. This instrument will be on the market as soon as practicable.

In preparing the tooth for implantation, the pulp chamber should be cleansed and the root filling introduced through an opening made in the crown. Under no condition should any alteration of the root be attempted. Fill the root with gutta percha, endeavoring to have it pass through the apical foramen, but if it does not pass through with the aid of the finest broaches, fill as far as practicable.

Antisepsis is secured by bichloride of mercury, one part to one



thousand parts of water, and the tooth kept in a temperature from one hundred to one hundred and twenty degrees Fahrenheit.

Retention of the tooth should be secured by using gold caps or bands; ligatures, whose frequent removal prevents perfect rest, should not be employed. An impression of the implanted tooth and its adjoining neighbors can be taken immediately after implantation with Melotte's compound. A gold cap (22 k. 30 gauge) covering one-half of the crowns of two or three teeth, including the implanted one, can be made in a few minutes, and fastened to the teeth with oxyphosphate cement.

I have recommended the use of Hydronaphthol as a wash after the operation, and have ordered the patient to continue its use for four to six weeks, in preference to the use of a tooth brush or any other method of cleansing, which at the same time may be a source of irritation. It should be used in a saturated solution (1:1100).

The accidents attending the operation are, (1) fracture of the labial or buccal wall of the alveolar process; (2) entering the nasal passages; (3) entering the antrum, and, in the inferior maxilla; (4) injury to the inferior dental nerve and vessels.

Fracture of the labial or buccal wall is liable to occur where the wall is thin, or has been almost entirely absorbed, and where the necessity of the position the tooth must occupy compels the operator to prepare the cell near the external border of the alveolar process. It is followed by no unfavorable consequences, other than that a longer time elapses before the tooth has become firm, and that the labial or buccal surface of the implanted tooth will not be covered with bone and gum as near to the neck as otherwise would be the case.

Entering the antrum should be avoided if possible, but if it can not be prevented, the antrum should be thoroughly washed with the bichloride of mercury, one to five hundred parts of water, and the implantation of the tooth will be followed by no ill effects. Of the other possible accidents none have occurred to me.

Of the procedure in operating not much can be said, as each operation is a "law unto itself." A crucial incision having been made in the gum, the free edges are pushed out of the way to permit the entrance of instruments without lacerating the soft



tissues. With the various instruments above referred to the cell is prepared, and the tooth fitted until an approximate or as near perfect fit as possible is secured. The length of time varies from a half hour to three times that much. The pain to the patient is as variable as in the filling of teeth. Slight soreness for a few days generally follows the operation. The tooth usually becomes loosened in about two weeks, then continues to become firmer, but is not entirely firm until two months after the operation. The patient should be instructed not to use the side where the tooth is implanted for two months at least, and to be cautious for two additional months. A perfect connection secured, await patiently before approving or condemning the result—the approval or condemnation of the only competent judge—Time.

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### REVERSE PLUGGERS.

By G. V. BLACK, M.D., D.D.S.,

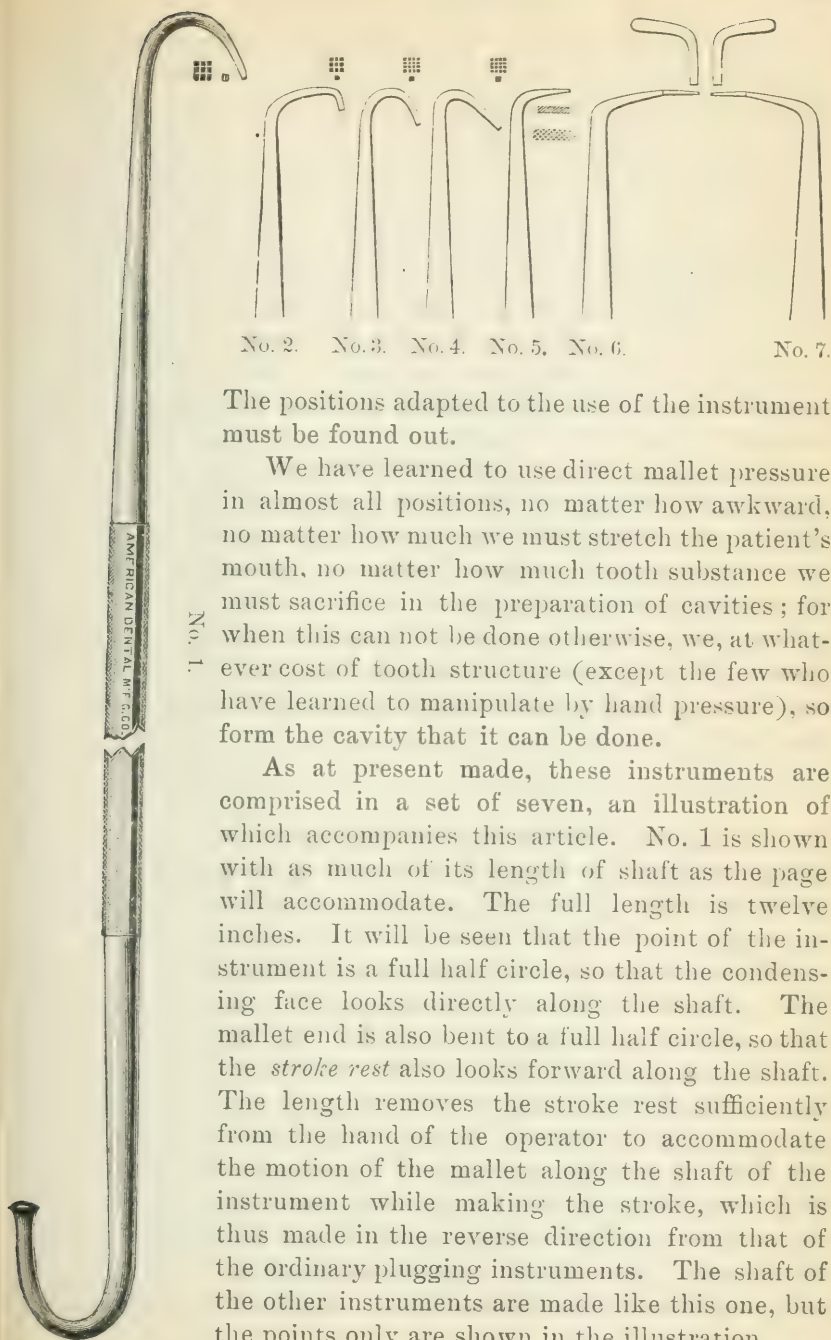
Professor of Pathology in the Chicago College of Dental Surgery.

With the general adoption of mallet pressure in packing gold there was an entire change in the form of the instruments used. The use of the mallet made direct pressure necessary, and although curved points, or points bent at an angle, are in general use, the pressure is almost entirely in the line of the long axis of the shaft of the instrument. Most of the older men retained their hand pressure pluggers for years after the adoption of the mallet, at first for filling distal cavities, which were thought to be out of the range of direct pressure, and later for such parts of the cavities as were inconvenient for direct pressure. As time went on most of us have so modified our manner of preparing cavities that nearly everything may be reached by direct pressure of the mallet. The greater ease of manipulation by mallet pressure is so marked that there has been a great tendency to bend everything to suit it, and thus escape the consumption of muscular force required for the consolidation of a large filling in an out of the way place by hand pressure. That this has been carried to an extreme will perhaps, be agreed to by the greater number of the older operators who had become thoroughly inured to hand pressure work.

This shows the estimate in which mallet pressure is held by the profession as compared with hand pressure. Indeed, I doubt if one in a hundred of the young men now entering the profession will ever learn to manipulate well by hand pressure alone. If this be true, any instrument that will enable us to use the mallet effectually and conveniently by other than the direct mode would seem to add to the range of our operations with that favorite instrument. There have been quite a number of efforts in this direction by different persons from time to time for twenty years or more. The greater number of these instruments have fallen into disuse for one reason or another. Probably one of the principal reasons for this has been that no manufacturer kept them on the market, well made and of proper forms. I have generally tried the different forms as they have come under my observation, and have a box full of odd patterns on hand now. But few of these were ever regularly placed upon the market by a reliable manufacturer, and therefore did not have a reasonably good opportunity to succeed.

Among the efforts that caught my eye was one by Prof. Homer Judd, then of St. Louis (about 1866 or 1867). I made a pair of these instruments at once, and have never been without some instruments of the kind since. They could not be had in the market however, and from time to time I made new patterns. Now after twenty years' use of these forms I have preserved those that I have found most useful and they have recently been placed on the market by the American Dental Manufacturing Company, so that now a well made instrument, of a form that has been tested, is available.

This being the case I have thought it well to give some simple directions for the use of the instruments. This is the more necessary from the fact that, at the first effort, the instruments seem rather awkward to most persons. This occurs from the fact that the position of the instrument and the whole process of manipulation is the reverse of the customary method. The assistant in striking the instrument strikes from the hand of the operator instead of toward it. The instrument can not be held in the hand as others that we use for mallet pressure, and especially the rests or supports for the hand about the face of the patient while manipulating must be different, and a new mode must be learned.



The positions adapted to the use of the instrument must be found out.

We have learned to use direct mallet pressure in almost all positions, no matter how awkward, no matter how much we must stretch the patient's mouth, no matter how much tooth substance we must sacrifice in the preparation of cavities; for when this can not be done otherwise, we, at whatever cost of tooth structure (except the few who have learned to manipulate by hand pressure), so form the cavity that it can be done.

As at present made, these instruments are comprised in a set of seven, an illustration of which accompanies this article. No. 1 is shown with as much of its length of shaft as the page will accommodate. The full length is twelve inches. It will be seen that the point of the instrument is a full half circle, so that the condensing face looks directly along the shaft. The mallet end is also bent to a full half circle, so that the *stroke rest* also looks forward along the shaft. The length removes the stroke rest sufficiently from the hand of the operator to accommodate the motion of the mallet along the shaft of the instrument while making the stroke, which is thus made in the reverse direction from that of the ordinary plugging instruments. The shaft of the other instruments are made like this one, but the points only are shown in the illustration.

*The positions* calling for the use of these instruments are, first, all distal surface cavities in the lower jaw from the cuspid backward. Second, a large proportion of the grinding surface cavities in the lower molars. Third, a portion of the buccal surface cavities in the second and third molars both above and below. Fourth, a portion of the distal surface cavities in the bicuspid and molars in the upper jaw. Fifth, in a minority of proximate cavities in the incisors where it is desirable to work toward the cutting edge from the inside of the mouth. Finally, any position in which the cavity is more easily formed with the right angle attachment. It will at once be seen that these positions comprise those that are difficult of access by direct mallet pressure. Cavities that are difficult, simply from the fact that they are far back in the mouth, are difficult with these instruments as well as with direct mallet pressure. In beginning the use of the instruments, therefore, it is best to make fillings with them that are not so very difficult, such as grinding and distal surface cavities in the first and second lower molars and the bicuspid. After some facility in the manipulation has been acquired more difficult fillings may be undertaken. Also, the instruments may be used simply for difficult points for direct mallet pressure, in the class of cavities mentioned, such as condensing against the buccal walls of distal cavities, or in the anterior buccal portions of grinding surface cavities.

#### MANNER OF HOLDING THE INSTRUMENTS.

The position of the instrument in the hand is nearly the same for all positions. In fact, there is but one way of holding any instrument in this class of dental operations, and any radical change from this must be regarded as an exceptional position, which is only to be used to overcome some temporary difficulty. This position is the same as that of the pen while writing, the same as that used with direct pressure instruments, with this difference, the most general position of the hand is that which we get when the pen is stood perpendicularly on its point on the paper, with the wrist raised so as to be in line with the forearm. In other words, take hold of the instrument as you would an ordinary direct pressure plugger and then so bent the fingers that its shaft will form a right angle with the arm. Now turn the palm of the hand upward and bring it to the face of the patient



in such a way that the backs of the third and fourth fingers will rest against the lower jaw.

Now you have the instrument in position for almost any operation on the lower teeth. In some cases it is well to grasp the instrument far enough from the point so that the ends of the third and fourth fingers may rest on the lower border of the lower maxilla. Most operators will find a difficulty at first in resting the hand for careful manipulation. It will be seen at once that instead of having the ends of the fingers presented to the mouth in such a way that their ends may find a rest upon the teeth, we will generally have the backs of the fingers resting on the face. At first this may seem insecure, but a little practice will serve to dispel this. If now, the long curved instrument (No. 1) held thus, be tried upon the different teeth it will be found that its point will readily come directly into the depressions of the grinding surfaces of all of the lower bicuspid and molars except it be the wisdom tooth, and if the teeth lean a little inward, a thing that gives us trouble with direct pluggers, it strikes into them all the better. Often we will need to set the patient's body upright and have the head thrown a little backward, or a little to the opposite side from that upon which we are manipulating so that the long shaft will clear the chest and garments. Very often positions will be found in which the shaft should lie very close to the face. Occasionally, to reach some position far back in the mouth, I reverse the instrument in my hand, holding it as I would a pen *with the point upward*. In working on the right lower teeth I find it most convenient to stand on the left side of the patient with the instrument hand passed around the head. In working on the left lower teeth stand on the right side, and rather facing the patient.

The positions in the upper teeth are rather more difficult than in the lower, and I rarely use the instruments in packing gold in these except to condense against the buccal walls of distal cavities, in the bicuspid and molars, or to fill some undercut. However, in the buccal cavities of the upper molars the instruments are often invaluable. When working in upper distal cavities in the right side stand on the left and passing the right hand over the head of the patient, hold the instrument like a pen. When working on the left upper teeth the position is like that of the

lower jaw, except that the hand is so turned that the shaft of the instrument is pointed upward. These are very difficult positions for the assistant.

The handling of the mallet requires a little practice on the part of the assistant. This is, of course, reversed, that is, the stroke is made from the hand of the operator instead of toward it. The shafts of the instruments are made twelve inches long to accommodate the motion of the mallet between the hand of operator and the stroke rest. The motion of the mallet should, of course, be directly in the line of the shaft. A sideling blow on this instrument is just as bad as a blow that is "out of line" on a direct plugger, and especial attention should be given the matter until the assistant has learned just what is wanted. For the same effect the stroke of the mallet (especially if light) should be a little stronger than with the direct pluggers on account of the extra weight of the instrument. When the mallet is once rightly used it will be found that the instrument works as steadily as the direct plugger.

*What should we expect to do with these instruments?*

At first thought, many will doubtless say, use them at points that are inaccessible to direct pluggers. After nearly twenty years use of them I should say use them where the work can be more conveniently and accurately done, and not by any means to confine their use to difficult points. The operator should rather begin their use in crown, or grinding surface, cavities in the lower molars; and especially in those that turn a little inward. In these the bulk of the filling should be built with No. 1. The right angle attachment and bur may be used freely toward the buccal and anterior walls of the cavity, and when the preparation is otherwise satisfactory, any undercuts that may appear in these directions can be perfectly filled without difficulty or loss of time. Overhanging enamel that is liable to breakage should not be left in any case, but the removal of good material for the purpose of gaining direct access is entirely unnecessary in this and many other positions where most operators cut widely. In the progress of the work it may be necessary to occasionally take a direct plugger to condense toward the lingual and posterior wall. In most cases that are in fair view, the work may all be done with either the direct or the reverse pluggers. In the lower wisdom

teeth I usually begin the work (in large cavities) with the direct pluggers, working toward the back part of the cavity, especially when I use much soft foil, only using the reverse instrument occasionally until the cavity is perhaps two-thirds filled, and then pack all of the back part of the remainder of the cavity with annealed gold, using the direct plugger, and all of the forward part, using the reverse, alternating them, of course. In doing this I probably do not change instruments as often as most operators do when using direct pluggers only, for the reason that my two instruments usually reach every part of the cavity easily and perfectly.

The next, and most important position, is in distal surface cavities in the lower teeth. In packing gold in these the reverse pluggers may generally be held so that the force of the blow shall be directed in the direct line of the long axis of the tooth, except when it is desired to pack against the buccal or anterior wall. If, however, the form of the cavity and the strength of the tooth makes it desirable to make pits or grooves toward the buccal or lingual cusps, using the right angle attachment, these are readily filled with No. 2, No. 1 and No. 4 will, however, be used for the bulk of the filling. In many of these, especially in those teeth that lean a little inward, I only use the direct plugger occasionally to pack against the lingual wall. The reverse pluggers do the bulk of the work much more conveniently.

In the distal cavities of the upper bicuspid and molars the reverse pluggers are to be used only to pack against the buccal wall, or in undercuts in this direction. Their use in the upper jaw is not very convenient, neither are they so much needed.

I have used these instruments with great satisfaction in the buccal cavities in the second and third molars, in those cases in which it was difficult to stretch the lips enough to get well at the work with direct instruments. In this position any of the first four numbers may be used. Suppose the cavity is in the buccal surface of the second left lower or upper molar. Stand on the left side of the patient, and taking the instrument in the hand like a pen, place the ends of the third and fourth fingers against the lower jaw on the right side, pass the instrument directly across the patient's mouth, press the shaft back into the angle on the right side, and bring the point into the cavity. It will gener-

ally be found that the position is not inconvenient for either operator or patient, much mouth stretching is avoided, and the packing of the gold is readily and rapidly accomplished. In similar cavities on the right side, stand on the right side rather in front of the patient and pass the shaft of the instrument across the mouth in a similar way. After a little practice in these positions the operator will prepare the cavities a little differently to suit the mode of manipulating. The anterior part of the cavity may be left square, or undercut if desired. In the lower teeth particularly, the direct plugger should be used to condense against the cervical wall.

No. 5 is a foot shaped plugger, serrated, the use of which can hardly need explanation. Nos. 6 and 7 are right and left knock-knee foot condensers, designed especially for final condensing in distal cavities when soft gold, or tin, has been used for the cervical portion of the filling. A trial of them in the mouth will readily demonstrate that they are so formed that one or the other will easily reach, and can be used to condense against, any part of the distal surface, or any distal angle, of any tooth in the mouth. It only requires a very little trial of them to demonstrate their utility.

No. 3 I use mostly for condensing about the margins of cavities when nearly finished, and especially for incisors in case it is desirable to condense toward the cutting edge from the palatine or lingual surface. In other positions it will often be found that the short curve is more convenient than the long one.

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## THE PREPARATION OF CAVITIES. WITH A SHORT HISTORY OF INSTRUMENTS USED FROM THE EARLIEST TIME TO THE PRESENT DAY.

BY B. L. RHEIN, D.D.S., CHICAGO, ILL.

There is no portion of practical dentistry in which history is more barren of detail, than that of the subject of this paper.

From all the resources at hand we can come only to the one conclusion, that prior to our generation, the preparation of cavities, was done in a very crude manner. The only requisite seemed to be a cavity which would retain the filling. The lack of knowledge of the minute anatomy of the tooth—most of our



predecessors looking upon this portion of the anatomy as very similar to a piece of ivory—was the cause of this.

Prior to the introduction of the rubber-dam, there were lacking the incentives to the proper preparation of cavities, which exist to-day, mainly through this invaluable adjunct of the operating room.

In looking back we find that those instruments used to prepare cavities, were tools taken from the various trades, and all of them used by hand. One of the earliest instruments to be used was the ordinary mechanical file. This was used for the removal of decayed dentine through abrasion. This form of instrument bore no resemblance to the delicate instrument used to-day for trimming enamel edges, etc. With the file were used various forms of cutting instruments, mainly chisels. These were almost all miniature reproductions of those of the carpenter. The drills were all delicate metal tools, as seen in spear-pointed, the flat-bottoming drill, the bur, etc. While the old scalers vary in form from the *machete* of the South American woodsman, through modifications of the hatchet and the pruning-hook to certain tools of the ship-builder. Another difference between the cutters of then and now, is that whereas each of our instruments has its own particular hand-piece, it was then the custom to have each tool separate, but all fitting in one common handle, which was very generally of some very expensive material, ivory or mother-of-pearl being the favorites. These were very often adorned with elegant carvings, and made radiant with costly jewels, varying according to the purse of the dentist, and used to dazzle the eyes of the bewildered patient.

The drill was originally, and for a long time, simply rotated by the fingers without any protection to the skin. For this purpose, in 1846, Dr. A. Westcott introduced the finger-ring and drill-socket. At this time also came into use the drill-stock, improved by Dr. J. F. Flagg, of Boston. Drs. Maynard and Spencer also introduced improved drills. In 1850 Dr. Chevalier brought out an improved kind, worked by a small crank and bevel gears. In the same year various forms were introduced by B. B. Alfred, C. N. Dubs, John Lewis and W. W. H. Thackston. In 1858 appeared the drill invented by Chas. Merry. This was the forerunner of the present dental engine. There were

two hand-pieces, one to hold the instrument in place, the other to drive the holder to which it was connected by a universal joint of spirally wound wire. It is this flexible joint, improved, which renders possible the modern dental engine. In 1868 appeared G. F. Green's pneumatic engine, and it was quite generally used for a time. The first of the Standard engines to appear was the Morrison in 1870. There are traditional accounts of John B. Beers, of Rochester, having invented, solely for his own use, a pedal engine as far back as 1842. After the Morrison came the Bonwill engine. In 1871 Elliot's suspension engine was patented. After that the S. S. White engine, which needs no description, and the Johnston Bros'. engine which has lately gone out of use. (? ED.) Ash, of London, makes a dental engine entirely different from any we have seen, and Jameson, of London, has recently placed upon the market a cordless engine. About 1870 Dr. G. V. Black, of Jacksonville invented the helper lathe. The growing tendency at present is to the use of automatic power to run the engine. Mr. G. F. Green, inventor of the pneumatic engine, produced also the electric burring engine, the first of its kind being a failure, mainly due to lack of power. The present water, electric and gas motors, are very efficient. During the present year there has been placed upon the market an electric motor by the Detroit Motor Co. (which, if it proves successful and the price is reduced within the means of all dentists) will eventually take the place of the dental engine. Sensitive as well as hard dentine can be very easily drilled with it, its rapidity and steady motion giving less pain to the patient. It does away with the exhaustive foot and leg motion, and another point in its favor, is that it will run backwards equally as well as forward, and is instantly reversible.

Files were improved by Dr. E. Townsend, of Philadelphia, long ago; and by Dr. Harris, of Baltimore, in 1833, by J. D. Chevalier in 1846. These are only a few. Latterly we have wheels, disks and numerous other contrivances and inventions for preparing cavities, which all dentists are familiar with.

The operator can not be too careful in the preparation of a cavity. No matter whether the filling to be inserted be of gold, amalgam, cement or gutta percha, the same care should be taken, although it seems to be easy to prepare a cavity, I find it some-

times to be the most difficult part of the operation. The cavity must be so shaped that when properly filled it will retain the filling. The margins should be perfectly smooth and firm. Care should be taken to remove all thin projecting edges, do not be afraid to *sacrifice sound dentine or enamel*, if by so doing you can improve the filling to be inserted, and arrest future decay. Use the chisel freely where it is necessary, especially in contouring bicuspid and molars. Dr. E. Parmly Brown, of Flushing, L.I., invented a set of double-end chisels, which are admirably suited for this purpose.

If you allow the edges of a cavity to remain frail you are sure to fracture the enamel while inserting the gold, from the pressure that is brought to bear upon the walls by the mallet or plugger. I have seen a great many teeth, especially incisors, that contained beautiful fillings, but upon close inspection found the enamel fractured, in some instances to the length of an  $\frac{1}{2}$  of an inch. This is in most cases the operator's fault, in not shaping the cavity properly. I do not mean to infer by this that this is the only cause of the enamel cracking, as it may be done also by the use of dull burs and excavators, in drilling out a cavity, or in frail and brittle teeth by a blow, biting upon hard substances, cracking nuts, etc., but in most cases you will find the cause to be in allowing the margins of a cavity to remain too frail, and then by constant use such margins will break away, the fillings will leak, the saliva and microbes will penetrate beneath the filling, new decay sets in, until it reaches the pulp, finally destroying it, the dead pulp not being able to emit its deadly gases, through its natural channel, causes abscess, swelling, severe pain, and often the loss of the tooth.

Fissures in bicuspid and molars that contain pinhead cavities or show signs of decay, should be excavated or drilled out *their entire length*, do not insert two or three pinhead fillings into a fissure, but drill it out and *fill its entire length*. In shallow cavities it is always well to drill one and sometimes two retaining points; for this purpose the cone-shaped bur is preferable, the bottom of the pit being larger than the orifice, making a good anchorage for the filling. Do not hurry, but take your time in preparing a cavity, do not figure how *quickly* you can insert a filling, but *how well* you can do it, and it will most assuredly

lead you to success in the end. I had the misfortune some years ago (I regret to say) to be connected with a dental office that was run like a barber shop, about every thirty minutes this would-be-dentist would call *next!* from his operating room, and the office boy would usher in the next victim. (This office had a very large run of patients.) The man prided himself upon the number of fillings he could insert in a day, and the most difficult gold filling did not take him more than from thirty to forty-five minutes to prepare, fill and finish fillings that would take any *honest* dentist, from two to three hours to do. He would simply with an engine bur, drill out the loose and soft decay, slap on the rubber-dam, where it was easy to adjust, if not he would do without it, it made no difference to him, he would then take a sheet of foil, and with *his fingers* roll it into a long strip, jam it into the cavity with an ordinary plugger, or the automatic mallet, until the cavity was full, then cut it down with a corundum disk, run his burnisher over it and it was done. The short time I was in that office, there did not a day pass that from one to three patients would come in complaining that the filling he put in for them a week or two ago had fallen out. He then, with a benign smile, would turn them over to me, and I would have to refill those cavities without remuneration. My connection with that office was very limited. This man, you will readily see, was dishonest to his patients, all he was after was their money, not caring how his work turned out. There are only too many more such rascals practicing dentistry in this country, and I hope to live to see the day when they will all be disbarred from practicing.

It is always preferable to prepare a cavity with the rubber dam adjusted, as, when the cavity is dry, it gives less pain to the patient, and better light to the operator. Should the decay run close to the pulp, great care must be taken so as not to expose the same. All decay should, however, be removed; throw plenty of light into the cavity, so that you can plainly see what you are doing, and that you do not expose the pulp; use your instrument deftly, and do not grasp it as you would a sledge-hammer. Should the cavity run in close proximity to the pulp, shape a pellet of white gutta-percha, or Hill's stopping, to fit the cavity; heat it gently until it becomes perfectly soft, being careful not to burn it; press it gently into the cavity with a round burnisher, then,



with a pellet of cotton thoroughly soaked in chloroform, press gently on to the gutta-percha; the chloroform will dissolve the gutta-percha, which will then flow and adhere to the bottom of the cavity; give it about ten minutes to dry and harden, then prepare a paste of any of the oxyphosphates (I prefer Dawson's cement, as I find it hardens quicker, and is less irritant than any of the others in the market, and is always reliable,) take a round burnisher dipped in glycerine, press the cement into the cavity, allow it about ten minutes to settle and harden, then, with a sharp excavator or scoop, remove all excess; now you have a good solid foundation for your permanent filling, with no danger of exposing the pulp. In removing the debris from a cavity, always use warm air with your chip-blower, as it is less painful than a cold blast of air, and when you use water to cleanse out a cavity always have it warm. Absence of moisture was not formerly considered of any importance, none of the old writers speak of a *dry* cavity. It is only within our time that proper attention has been given thereto. The napkin was for a long time the only thing used for this purpose, pledgets of cotton or linen being used to dry out cavities. In 1850 Dr. J. B. Rich recommended tissue or bibulous paper. In the same year Dr. Dwinelle presented his method of a wax-coffer-dam built around the tooth. In the same year appeared the first saliva ejector. In 1854 Dr. R. Arthur introduced his saliva-pump. Various other saliva-injectors have been brought out, from that of Dr. W. H. Dibble in 1866 to the present Fisk ejector. Compressing the ducts of Steno and Wharton, was also practiced. Tongue holders were also used. In 1856 Dr. Taft introduced the hot-air blow-pipe. In 1860 punk came into use, and in 1864 Dr. S. C. Barnum produced his great discovery—the *Rubber-Dam*.

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## THE TRIALS OF THE COUNTRY DENTIST.

BY A. SPARROW.

The qualifications of the country dentist are no more no less than what is required of the dentist in the city. The time is passed when the student of three months' office experience carrying up wood or coal, and cleaning cuspadores makes a full-fledged dentist out of an ignoramus, full of blow and lots of cheek.

When these men were scouring the country, town and hamlet, was the time that tried the very soul of the dentist who was a gentleman and a scholar in the full sense of the term, but as years go by our trials are of another kind.

A few of the old fossils of the school just described are still on earth. They have managed to get hold of a piece of land somewhere, which they farm in summer, and during the winter open an office with notice appearing in the weekly paper, reading something like this: "Dr. — has returned from his extensive farm, where he has made some substantial improvements, building a barn 16x24 with shed and other *necessary* buildings about the premises, doing most of the work himself, etc., etc., etc., and has opened an office with Dr. — (a physician) to reduce rent and other expenses in order to give his patrons the benefit of his skill at the lowest possible figure, having had years of experience, etc., etc." Experience, in what? farming? carpentering? The truth is he can not perform the most simple operation in a skillful manner, even if he did possess any tact, for he has no dental engine, and I have my doubts if he ever saw one; the instruments he has are those he used forty years ago (for the marks are plain to be seen upon them) when he carried all his paraphernalia in a box 4x6x8 inches. He can not treat a pulpless tooth to save him, let alone put in the filling afterwards. All such teeth must come out and more too when he says, "I will give you the whitest, cutest set of little teeth you ever saw, and all for eight dollars, warranted not to ache." It requires strength of body, strength of mind, strength of character for the progressive dentist to bear up under all this and not show his feelings publicly.

I have paid my respects to my competitor now for the trials in the office.

The agent of one or more dental depots visits you every sixty days, always expects you to buy fifteen sets of teeth, ten pounds Acorn rubber, and four ounces of amalgam, each visit aside from burs, drills, cements, disks, etc. Why, my dear runner, do you not know that the progressive dentists use fewer teeth every year, and ten pounds Acorn rubber is sufficient for all the dentists in the country for a year. No, we will have none of it, but instead will save all the teeth possible. We will buy five cents worth of oxide of zinc, an ounce of chloride of zinc for twenty-five cents,

making a saturated solution of the chloride in water, and this will make sufficient oxychloride of zinc to last a year or more. We will get a package of Soapine for five cents that will keep our hands clean and soft from laboratory work. We will buy an ordinary diary for fifteen cents that answers every purpose for an appointment book. We will keep a record of work done in our common ledger in the following manner, all the upper teeth will be named A B C right and left, commencing at central incisors and running back, all the lower teeth will be named 1 2 3 right and left, commencing at central incisors and running back.

— Anterior approximal surface.

| Posterior “ “

^ Crown.

+ Outside.

⊙ Inside.

O Nerve removed.

⌈ Pulp chamber filled.

Supposing the record was to be first bicuspid right side, nerve removed and pulp chamber filled, and gold filling in the crown, the charge would read :

To 1 root filling, ⌈ d R.

To 1 gold “ ^ d R.

The words root filling would indicate what had previously been done, and that the root of course had been properly treated to be filled, etc. Now, why all this just to show that we practice economies (and I have enumerated but few) as one of our trials, and that we can not buy everything that comes before us, desire it much as we may. To the progressive dentist it requires the strength of body, mind and character to bear up under this, especially when the runner tells you your credit is good and you can have all the time you wish, that he will instruct the house not to send you a “ please remit ” until called for, but the statement of account, and the please remit in *red ink* comes along the first of the month just the same.

Now as to our patients, they are good, bad and indifferent. Some who want all cavities filled with amalgam regardless of location, some must have “ gold platine ” (gold and platina alloy) it's better than silver. Dr. so and so fills with that. Some want

all cavities filled to-day, can not come to town again until next fall.

"Don't punch around in that tooth so much, you will make the cavity so large that the filling will show."

"You may put in gold in the front teeth if you will make it show, do not propose to pay for gold filling unless it shows."

"Don't believe in filling teeth any way, better be out and be done with it," and so on and so on ad infinitum. Will you get right up and swear at all this, or will you have that patience which a true and progressive dentist should have, and at last win, or will you dismiss the patient and have none of it; if you do, it will not be long before your office will be for rent, and you will be looking for some other business.

One of our greatest trials is a case like this: The patient visits you for the purpose of having her teeth examined, with a view to filling or extracting as the case may be. You make your examinations and tell her honestly and candidly, this front tooth can be crowned, the pulp removed in this bicuspid and root filled, this back root removed and the remaining cavities filled, leaving thirteen good teeth in fine order in the upper jaw—"Will see."

A few days after a neighbor is at the office, says: "Mrs. B— had thirteen teeth pulled the other day by old forceps across the way." I leave it to any man what he would say under the circumstances, there is no use getting mad about a little thing like that, but the next time a similar case presents itself you are sorely tempted to advise the extracting of the whole lot and take your chances on making her a set of teeth rather than lose the case; for we need all the work we can get and have time to do more than we get.

Our office, if carpeted and you have a pedal lever chair, a few instruments nickel plated, cuspadores, clean and sweet smelling. We are putting on entirely too much style, and making too much money.

If you go away for a little vacation, "tooth pulling must pay, won't give but 25 cents hereafter to have my teeth pulled. I'd like to know why he don't stay at home and attend to his business."

If we stay at home we get bilious and sick.

If we go to a state society not so much is said about that, for



thank fortune people are becoming educated and do really believe that attending dental conventions is a good thing; the Lord be praised for this, and that we can enjoy our four days away with some degree of peace and comfort.

Our trials with the competitor, the runner, our patients, our office, our absence, is not all; our very actions and wearing apparel are up for criticism. If you wear a silk hat you are a dude, if you don't, you are a slouch. If you possess any executive ability, you are expected to preside at public gatherings, lead the singing in the Gospel Temperance League meeting, attend to Sunday school work, vote the *anti-license* ticket for the well being of the city, and you thereby offend some good patients who vote the whisky ticket straight, and in a place where eight or ten votes carries the day for or against 'tis a hard trial, notwithstanding your principles of right and wrong.

And so it goes, but taking one day with another, our lot is not a bad one after you get used to it. We can have a delightful home in a beautiful town, with all the beauties of the blue sky and pure air, on the banks of a lovely stream where fishing is good, and have time for this sport. Where we do not work our very life out to pay rent and other expenses.

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## PROCEEDINGS OF SOCIETIES.

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### IOWA STATE DENTAL SOCIETY.

CEDAR RAPIDS, IOWA, MAY 3-6, 1887.

(Continued from Page 487.)

#### CAPPING PULPS.

BY DR. E. R. MULLETT, CLINTON.

\* \* \* When it is to be decided whether a pulp should be capped, devitalized, or the tooth extracted, it is best to adopt that course which promises the best results; if capping fails, and devitalization is also attended with unfavorable results, the extraction of the tooth can be resorted to. In some cases it is wise to adopt the last named action at once, if the indications are unfavorable to a successful treatment. I shall assume, in the absence of specific proof to the contrary, that it is found neces-

sary to extract a greater per cent. of those teeth whose roots have been filled than of those whose pulps have been properly capped. I think it is so in my own practice, and from what I see of the work of others, I conclude this to be generally true. If, then, teeth are more liable to result in abscess after the pulp is dead and the roots filled than when the pulp is capped, capping is the better practice.

The discoloration of pulpless teeth is objectionable, as also the liability to formation or the recurrence of alveolar abscess.

With keen edged excavators the softened dentine should be removed until either firm, healthy dentine is reached or the pulp is exposed. If the dentine is sensitive at the point of its union with the enamel, it is usually an indication of a living pulp, but the fact should be corroborated by other evidence. If the sensitiveness is slight, or entirely absent, and the tooth has been painful, it should be carefully removed until the pulp-chamber is actually reached. It is readily ascertained whether the pulp is living or dead, but is it well? To ascertain this point is very important.

Sometimes when the pulp-chamber is punctured a small quantity of pus will make its appearance. It may be but very slight, or sufficient may flow to fill the cavity of decay, and be mingled with blood. If this condition has been reached I should regard it an unfavorable case for capping, but if the flow of blood is of a bright red color, the indications for capping are favorable, and I would generally proceed to cap at once. After the usual preparation of the cavity, wipe it with a piece of punk dipped in creosote, allowing it to remain a few minutes. Cap with a small quantity of oxyphosphate applied gently and without pressure, permit it to harden, and then add additional cement to fill the cavity as far as is necessary for the purpose of protecting the pulp from sudden changes of temperature. During the process of hardening the cement can be shaped and trimmed to the shape desired. In trimming care should be observed not to dislodge the cap, and to insure this I sometimes cover part of the cement near the cervical margin with the filling material, and while that aids in holding the cap in place, I trim away the oxyphosphate at the grinding surface and proceed with the filling.

That pulp should be in a perfectly physiological condition

before capping. When there is but simple congestion without disintegration, slightly wounding it with a suitably shaped instrument, apply loose pellet of cotton dipped in listerine, or oil of cloves with a trifle of morphia, permitting it to remain two or three days. The pellet should be applied loosely. I do not favor the use of sandarac in this class of dressing, as the hardened cotton and gum are liable to result in undue pressure during mastication. If the pulp has remained in a comfortable condition, does not discharge pus or a watery fluid, but has a smooth, pinkish, healthy appearance, I cap at once; if the conditions are not favorable, treatment should be continued. In cases where the pulp is not exposed, and in small exposures, I frequently use a piece of quill, cutting it to the proper size and shape. Sometimes I place a small piece of gutta percha on the concave side of the quill, warm it sufficiently to soften the gutta percha, and apply to the pulp with the gutta-percha toward the pulp. Sometimes cement may be used in the same manner, and in other cases the quill may be placed immediately over the dentine, near the pulp, and the filling introduced upon it.

## DISCUSSION.

DRS. COCHRAN and ROGERS have but little faith in capping pulps with cements, and the latter prefers devitalizing the pulp to incurring unfavorable risks.

DR. INGERSOLL stated that a perfect knowledge of the pulp and its functions is essential to the proper understanding of the subject. A pulp at one time is not what it is at another. Evidently the principal function of the pulp is the development of the hard tissues of the tooth substance. The tendency of the pulp from youth to old age is the final obliteration of itself, and with this obliteration the nutrition of the pulp diminishes. In this respect the pulp resembles the general system, the less the vital force the less the chances of the retention of life, and this is also true of the pulp; its nutrition in advanced age is very much diminished, and hence the saving of its life is very doubtful. Because of its feeble vitality, the least or slightest irritation is liable to destroy it, for it has the feeblest vitality of any part of the body. The treatment of these cases is very doubtful, and I can hardly understand how some have the success they claim to

have. In speaking of exposed pulps, the question is, What is an exposed pulp? Some claim that exposure has taken place as soon as the dentine is exposed; others, again, do not believe the pulp to be exposed even if blood has appeared. So many materials are employed for capping pulps, and all claim to be successful; from this it would seem it does not matter what may be used.

Unless I can be certain of allaying the irritation, so that no inflammation whatever follows, I fear the chances of its saving are very bad indeed. Even in the most favorable cases, using a capping which I believe is best tolerated by living tissues (gutta percha and chloroform), I have been disappointed and failed.

DR. E. D. BROWER, of Le Mars, read a paper entitled "Abscess of the Antrum."

(TO BE CONTINUED.)

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### ILLINOIS STATE DENTAL SOCIETY.

TWENTY-THIRD ANNUAL MEETING, JACKSONVILLE, ILL., MAY, 1887.

(Continued.)

DR. L. C. INGERSOLL of Keokuk, Iowa, read a paper on "Medicinal Stimulants." He said:

"This is a laggard world; mankind must have stimulants; the animal creation, if domesticated, must thereafter be stimulated; even the soil, cursed by the thriftlessness and ignorance of its tillers, needs to be stimulated.

"There is nothing in the world's dispensatory in such universal demand and nothing in such universal use as stimulants. Witness the world's demand for alcoholic stimuli — for the stimulation of tobacco, tea and coffee; witness on every dinner-table the stimulating condiments, mustard, cayenne pepper, black pepper, horse radish, etc.; witness the hundreds of drugs and an almost endless variety of compounds for either external or internal use as stimulants. Human-nature manifests three sets of functions—mental, moral and physical—each demanding its appropriate stimulus. The trainers of youths recognize the truth of this statement as regards the mental and moral faculties. The laggard and indolent needs to be stimulated. The tramp is a tramp because he has lost his stimulus. The needs in each case



have a common basis in a common fact, namely, the incomplete performance of function. No function works uniformly up to its highest standard of normality, hence the demand for a stimulus, either natural or artificial. A stimulus is a medicine which has the effect to goad on the functions into more complete service.

“Pathologists agree that retardation of the blood current is one of the earliest manifestations of inflammation; also that there are few diseased conditions which do not present serious symptoms resulting from retarded circulation, hence it follows that stimulants must be applied to overcome this tendency and equalize the circulation.

“To a dentist the most common indications of disease in the vital tissues which he is called upon to treat, are pain and swelling. The swelling, as in case of an inflamed tooth-pulp, may not appear to the eye, but may be known to the patient by a sense of fullness, pressure and weight, giving at first only uneasiness and afterwards pain. The swelling in such cases is an overfullness of the blood-vessels, resulting from a retardation of the blood flow. This is a condition plainly indicating a stimulant, removing both swelling and pain. All stimulants are irritant. Most stimulants are sedative or narcotic in large doses. We also depend upon stimulants for a tonic effect. A tonic is a medicine which by invisible degrees promotes healthy action and bodily vigor. It differs from a stimulant not in kind but in degree. In applying stimulants as pain obtundants, we must recognize the fact that they act by differing processes, depending upon the different causes producing the pain.

“The prominence given antiseptics and disinfectants by modern scientific investigation has caused the importance of stimulants to be overlooked. Stimulation and irritation is so important and necessary a purpose in arousing functional action that I look with very little favor on that class of antiseptics which are ‘non-irritant,’ except when this effect is not required.”

In the discussion Dr. Newkirk said that he would differentiate between a stimulant and a food. A harrow applied to the surface of a field may be in one sense a stimulus, but a manure applied is a food. The proper place for stimulation is only in a pathological condition, hence its sphere is limited. At what stage of an inflammation should we stimulate? I think I have seen the mis-

take made by medical men of administering stimulants at the wrong time.

DR. BLACK said it was his impression that for some years we have not fully comprehended this subject of antiseptics, and that more time is required for experiment and study. I do not mean that we have not valuable medicines, indeed we can not do without germicides and antiseptics. There is another point that I will simply mention. We may combat minor organisms otherwise than by medicines which kill them, and physicians are doing so continually, empirically, and are now finding out reasons for it; for instance, I meet a man who is having a crop of boils. I give him alkaline treatment. The boils cease. Take the microbes from those boils, grow them in tubes, and we find, if we make the broth alkaline, they will not grow. There are a great many points such as this which will be developed in the future, that we need as dentists, and in this direction must our study be.

(TO BE CONTINUED)

#### INDIANA STATE DENTAL ASSOCIATION.

The twenty-ninth annual meeting of the Indiana State Dental Association was held at Lake Maxinkuckee, Ind., June 28, 29, 30, and July 1st.

Dr. W. B. Knapp, of Fort Wayne, read the "Report of the Committee on State of the Association," and Dr. J. E. Cravens, of Indianapolis, read a paper on the "Management of Deciduous Teeth."

The morning of the second day was devoted to clinics, the following operations being performed: Dr. Merritt Wells, of Indianapolis, "Gold Fillings in Proximal Cavities without Retaining Pits;" Dr. E. B. Call, Peoria, Ill., "Seamless Gold Crown;" Dr. G. S. Salomon, Chicago, "Gold Filling, Electric Mallet;" Dr. A. W. Harlan, Chicago, "Treatment of Pyorrhœa Alveolaris" and Dr. T. W. Brophy, Chicago, "Gold and Tin Filling, use of Matrix." Dr. D. D. Weissel, of Fort Wayne, exhibited new styles of "Artificial Teeth and Methods of Manufacture;" the Dental Motor and Battery of the Detroit Electric Motor Company, was also on exhibition.

At the evening session Dr. S. T. Kirk gave a verbal report on the subject of "Chalk talk on the preparation of cavities," which was illustrated by diagrams drawn on the blackboard—he emphasized the importance of excavating cavities further than the eye would indicate. Cavities located on the proximal surfaces of incisors, bicuspid, and molars require special care and attention in preparation; regards the use of retaining pits as wholly unnecessary; starts all his fillings with non-cohesive foil and finishes with cohesive.

DR. NOYES said in certain classes of teeth the approximal cavities could be prepared in such a manner as to materially improve their future retention. Agrees mainly in what the speaker said, and especially would urge more care in preparation of cavities located on such surfaces.

DR. SALOMON said his practice was to usually remove entirely the weak corners on the cutting edges of central and lateral incisors, then restore them again with gold and allow the gold to extend across the cutting edge in sufficient quantity to insure permanency and strength.

In absence of the paper on "Atmospheric Pressure and Adhesion as Retaining Forces," which was to have been read by Dr. Joseph Richardson, Dr. W. B. Ames, in opening the discussion said; his method of retaining full upper dentures in the mouth depends upon allowing the plate to pass high up under the lips and cheeks, and extending over the tuberosities of the maxillary bone, going far enough back on the palate to impinge upon soft tissues in that locality. A denture made upon this principle, would, when placed in the mouth, displace the soft tissues to such an extent as to make a perfect joint between the plate and tissues, thus entirely preventing ingress of air under the plate.

(TO BE CONTINUED.)

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The members of the Odontological Society of Chicago, were entertained last Monday evening, by Dr. Frank H. Gardiner at his residence in Hyde Park. Dr. Louis Ottofy read a paper on "The filling of root canals at one sitting without previous treatment.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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EDITOR: A. W. HARLAN, M.D., D.D.S.

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## THE AMERICAN DENTAL ASSOCIATION.

Now that the date and the place of meeting of the American Dental Association has been decided upon, we hope that all members who can do so will attend and help to keep up the record, both in numbers and the presentation of papers. The recent meeting of the American Medical Association in Chicago was larger in point of attendance than the meeting in St. Louis last year, and nearly double the number of members and visitors who were present at New Orleans two years ago. If there could be such a large number of physicians leave home, so near the time of the assembling of the International Medical Congress, surely two or three hundred dentists can go to Niagara Falls and there make arrangements to go a month later to Washington. Our far Western members may not be able to attend both the A. D. A. meeting and the congress, but we expect a pretty large turnout from the Middle and Eastern States, and also look for quite a number from Wisconsin, Iowa, Missouri, Illinois, Kentucky, Indiana and Michigan. We are assured by private advices that the usual number of papers will be read, and the dealers and manufacturers are already securing rooms for their exhibits. The National Association of Dental Examiners will meet at Niagara, and this body will bring some new members, as boards of examiners are continually changing their membership. Let all come, and bring along new instruments, inventions and ideas, for it is only in national gatherings that we have opportunities of renewing old acquaintances and making many pleasant and agreeable new ones.



## THE ABUSE OF DENTAL CHARITY.

That medical and dental charities have been extensively abused is a notorious fact. At a recent meeting of an "Assembly of Charities" in one of the large cities of the United States the subject was freely discussed, in the course of which the Secretary of the Charity Organization Society remarked that "the medical profession was engaged in a constant hand-to-hand fight against pauperism—not against paupers. The only way to avoid pauperizing a certain class of people is to look to the ultimate results. Medical charities tend to pauperization. When men once get medical attendance free they will never pay doctors' bills if they can avoid it." He estimated that of the applicants for aid at the medical free dispensaries "one-third gave either false or vague addresses, one-third were proper objects of charity, and one-third were able to pay either the proper fees for medical attendance or a moderate part of such fees."

In the larger cities of our country dental charity certainly suffers such gross and continued abuse that the subject has become of much importance to a great number of the profession. There is in vogue among dental colleges the practice of freely advertising that services will be rendered free, or at cost of material, but no restrictions are placed upon those entitled to avail themselves of these privileges; hence any one, irrespective of his or her ability to pay, is entitled or can demand services according to the tenor of the advertisement. No inquiry is made whether the applicant is a worthy object of charity or not, and that many frequent these institutions who are not only able, but in many instances in good circumstances, may be readily attested by a large number of practicing dentists. Nor is that all. The colleges located in the large cities are run as money-making institutions. We except no school in making this statement, for the advertisement that fillings, etc., will be made at cost of material is false, and its object is only to attract the unwary. It is the custom for the colleges to charge from 300 to 400 per cent. over and above the cost of material, and very often a handsome fee is exacted and paid.

Another objectionable feature of the present system is that of employing "demonstrators" and "assistants" during the sum-

mer months, a time when nearly all the students are absent, and at the same time assiduously continuing the practice of advertising for patients, and hiring "extra help" to do the business thus secured, paying the "demonstrators" a meagre salary and pocketing a handsome profit. The patients patronizing the colleges during this season are under the impression that "professors" do the work, as the demonstrators are so addressed by the students; hence, they say, the college professors render them services for less money than the practicing dentists, and, of course, in order to be a professor in a college, he must be a better dentist than those who do not hold so distinguished a position and title. It seems only just, therefore, that it should be a rule of each college that under no circumstances should a demonstrator begin an operation and carry it to its completion, but that some of the intervening steps should be performed by students.

As far as the class of patrons is concerned, any one can readily convince himself that dental charity is indeed sadly abused by visiting a dental infirmary during the hours devoted to operative dentistry. The general appearance of patients will lead any one to admit that a large majority of them are not only able to pay fair prices, but many of them can well afford to give liberal fees. In some instances a penurious disposition causes these institutions to be sought even by persons of moderate wealth, for handsomely dressed ladies, sometimes in sealskin sacques, are some of the frequenters. On occasions these patients, rather than disappoint the waiting student on a rainy day, will be driven to the college in a hansom cab! And this is dental charity! Is there a remedy? Undoubtedly there is one to be found, if desired, by which the attendance of a class deserving and needing charity may be increased, and by which the impostors may forever be shut out from taking advantage of so worthy a privilege. Schools of dentistry could furnish "charity certificates" in blank form to public officials, physicians, dentists, clergymen, prominent business men, and others, who are willing and prepared to vouch for the patient's inability to pay a reasonable fee. Let the colleges rigidly enforce a rule not to permit any to enter the infirmary except when provided with a certificate, and even then, in doubtful cases, scrutinize applicants as to their ability to pay a reasonable fee to practicing dentists.

We call attention to this evil as one demanding urgent attention on the part of the various dental college faculties. It is said that in Philadelphia the practice of dentistry has suffered seriously at the hands of these institutions, and in other cities where two and three are located the evil is of a magnitude foreshadowing disastrous results in the future. What college will lead a movement of reform?

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#### DENTISTS CAN ENTER THE INTERNATIONAL MEDICAL CONGRESS.

By a careful reading of an editorial in the *Journal of the American Medical Association* July 9, it may be seen that any regular graduate of a dental college possessing the title M.D., D.D.S., D.M.D., L.D.S., will be admitted as a member of the congress on registering his name and paying the fee of \$10. This is as it should be, and is what we have contended for from the beginning. A dental section would be no section unless every reputable dentist, a graduate of a respectable dental college, could be admitted as a right, and not have to come in by favor of a special invitation. At this late day the managers of the congress have been compelled to listen to the earnest and respectful protests of dentists against their exclusion from the congress, except by special invitation. Let every patriotic dentist do what he can, with money, a paper, or go in person, contributing both to help make of the dental section a pronounced success.

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#### THE INTERNATIONAL MEDICAL CONGRESS.

At the late meeting of the American Medical Association an action was taken which results in the removal of all objections hitherto entertained by dentists in reference to their standing toward the International Medical Congress to be held in Washington September next. The resolutions, as published in the June number of the REVIEW, have a two-fold effect. First, that of satisfying those who have clamored for medical recognition; and, second, by removing the obstacle in the way of reputable dentists—whose pride as *dentists* prevented their kneeling before the propaganda—entering the congress and the oral and dental section thereof, without invitation,—but as free, scientific men entitled *per se* to the privileges of this humanitarian assembly.



The REVIEW will always be found in the vanguard of progress, and will at all times willingly sacrifice personal feelings, financial means, and all else, to the best interests of a profession to whose welfare it is so sincerely devoted. Hitherto, while the dental section of the congress was conducted in a manner not believed to be for the best interests of the dental profession—rather than by being in error and thus doing an injustice to any one connected with the section—we have refrained from editorially referring to the dental section of the congress; with the hope that at the June meeting the objectionable features would be partially remedied or entirely removed. This having been done, we take the greatest pleasure in urging all dentists to affiliate with the section, to throw their entire energies into its work and by every available means and methods to aid in its success. While none should forget the allegiance and duty they owe to our local, State, and National organizations; it is but due to the dentists from abroad, the dentists of this country, for the reputation of the profession and of the oral and dental section of the congress, that all should add to it their strength and power, that the results of the work of the section may be of a high order and that it may yield the richest of fruit.

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#### THE INDIANA STATE DENTAL ASSOCIATION.

The dentists of Indiana could not have chosen a more delightful resort for their meeting than Lake Maxinkuekee, situated near the northern border of the State, and surrounded by numerous club-houses and private cottages and good hotels, nothing was wanting to make their annual meeting a success. There was fun for the boatman, the fisherman, and the swimmer, and no rain or clouds to mar the sunshine. About one hundred dentists, possibly a few more, were present. The clinics were given on an open veranda facing the lake, so that all had an opportunity to witness the several operations. Occasionally a lamp would have to be relighted, but this was a small matter compared with the discomfort of operating in summer, in a room not well ventilated, with a crowd of interested lookers-on elbowing the operator every moment that he stepped aside from his work of the hour. Every operator enjoyed this freedom we are certain,



because we were there. There were several good papers read, most of them much better than those of the year before, and there was no lack of discussion, although the president closed the debate two or three times when, perhaps, it would have been better to have waited a little longer for responses to the invitation to talk. The feature of the meeting was the discussion of the question of the retention of dentures in the mouth. There was no paper presented, but Dr. W. B. Ames took up the subject of adhesion and atmospheric pressure as forces in the retention of plates in the mouth, and handled it in a scientific manner. (We will shortly publish his views in full, and then the reader will be able to judge for himself on this point.) A whole evening was spent in the discussion of the subject, and we believe profitably. The "Mabbitt case" was presented in full to the society, and the opinions of about twenty dentists were read, who held that from an examination of a certain skull, and teeth *in situ*, the subject was a male, aged about fifty years. (A coroner had decided it to be the skull of a female aged about twenty-five). Much discussion took place, supporting the proposition that the subject was a male, etc., etc. The time might have been more profitably employed, as it was a self-evident truth. Aside from the interest in the aforementioned, we think the clinics were most enjoyed by the members. (See report under proceedings of societies.) The outlook for the future of the society is encouraging, as it has a number of wide awake, energetic members who are determined to go ahead and uplift the standard of dentistry in the Hoosier State, and make the association so profitable to every reputable dentist that he can not afford to miss a meeting in the future. The next meeting will be held at Terre Haute, Ind., the first Tuesday in June 1888.

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#### THE CHICAGO DENTAL SOCIETY.

The resolutions with reference to patents, published on page 447 in the DENTAL REVIEW of last month, were acted upon and endorsed by the Chicago Dental Society at a regular meeting held Tuesday, July 5, 1887.

Papers on the 'Capping of Exposed Pulps' were read by the following members: Dr. Geo. H. Cushing, Dr. T. W.

Brophy, Dr. D. M. Cattell, and Dr. A. W. Harlan. The discussion was opened by Dr. J. N. Crouse; other members followed.

A committee of three was appointed, composed of Drs. J. W. Wassall, A. E. Matteson, and Louis Ottogy, for the purpose of arranging a series of monthly clinics to be held under the auspices of the society; a monster clinic will be held in December, the date of which has not been determined. An electric cautery was exhibited, invention of Dr. Hartt for the instantaneous destruction of the pulp and morbid growths in the oral cavity. Dr. Salomon exhibited a new form of electric mouth lamp. Resolutions were passed, thanking Drs. N. S. Davis and W. W. Allport for their efforts in securing the adoption by the American Medical Association of the resolution admitting dentists to full membership in that body. The President and Secretary were instructed to issue certificates to members desiring to attend the next meeting of the American Dental Association.

The society adjourned at a late hour, with the satisfaction that much good had been accomplished by the holding of such a symposium. The papers read at this meeting will appear complete in the August number of the REVIEW.

## DOMESTIC CORRESPONDENCE.

### LETTER FROM CHICAGO.

*To the Editor of the Dental Review:*

DEAR SIR: On page 324 of "Gorgas' Dental Medicine" we find the following:

R—Tinct. Ferri Chlor.	-	-	-	-	℥ i.
Quinæ Sulph.	-	-	-	-	℥ i.

Signa.—Teaspoonful 4 times daily.

The above is credited to Dr. Garretson. On page 77 of the same work the dose of tinct. of iron is given as from 15 to 30 minims.

Now on page 866 of "Garretson's Oral Surgery" we find the R with the following directions:

15 to 20 drops, 3 to 4 times a day, in water.

Is not such a wide difference in doses apt to puzzle novitiates; and is not a mistake evident in one of these text books?

Also on page 153 ("Gorgas") we find:

R—Tinct. Gelsemii	-	-	-	-	gtt. x.
" Aconiti	-	-	-	-	gtt. v.
Aquæ.	-	-	-	-	̄ iv.

Signa.—One teaspoonful every hour.

In the above we have 32 doses, or less than  $\frac{1}{3}$  of a drop of the Gelsemii and less than  $\frac{1}{8}$  of a drop of tinct. Aconiti in a dose. In the posological table is given the dose of tinct. Gelsemii as 8 to 15 min.; tinct. Aconiti fol., 8 to 16 min.; tinct. Aconiti Rad., 1 to 5 min.

Now the above does not say whether fol. or rad. (an omission) and being prescribed for neuralgia is not the dose extremely small? I would dislike to wait for its effect. I have given more than the entire R at one dose repeated in two hours.

CHICAGO, June 30.

E. L. C.

#### BOGUS AMALGAM.

*To the Editor of the Dental Review :*

DEAR SIR:—Inclosed you will find a sample of an amalgam, that was offered me as a \$5 amalgam, but, having taken it in trade, the seller was willing to sacrifice himself and let us have it at \$1.25 per ounce. (The sample was mixed in the usual way, and that is the condition of it thirty-six hours after.) But having long ago adopted the advice of Poor Richard, who says, "Never buy anything because it is cheap," I did not invest. There may be those among the younger, and therefore the less wealthy of our profession, to whom the saving of 75 per cent would seem to be a consideration; but I think the general verdict is, that there is nothing too good for the dentist, and that the commercial world will not allow \$5 gold pieces to sell at \$4 apiece; and that when a man offers to sell you amalgam at \$1 an ounce, you may be pretty well assured that that is all it is worth.

The sample inclosed I believe to be absolutely worthless, and, like the proverbial razor-sellers' razors "was not made to use, but made to sell."

It may be put down as a maxim that all such pretended bargains are a delusion and a snare, and as our success depends largely on the quality of the material used, it is well to adopt the

idea that there is none genuine unless it bears the "stamp and signature" of some well-known and reputable manufacturer or dealer.

Yours truly,

P. J. KESTER.

Chicago, July 6, 1887.

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## FOREIGN CORRESPONDENCE.

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### LETTER FROM LONDON.

*To the Editor of the Dental Review:*

SIR:—I noticed a short time ago in the *Dental Cosmos* a very able article on "Bridge work," by Dr. Knapp, of New Orleans, it is worthy of any one's careful study. But I noticed one very essential point he omitted, *i. e.* instead of fastening a bridge, of any extent whatever, immediately, I have found it much the best to put it in and let the patient wear it for two or three days (removing it when possible daily to thoroughly cleanse it). It will then be found to have settled down nicely to place, should there have been any undue pressure upon any of the supports caused by any little change during soldering, the teeth or roots will have by that time accommodated themselves to the new state of affairs.

The articulation can then be adjusted more satisfactorily than when it is put on and fastened at once. Three days is usually sufficient before the piece is fastened permanently.

London, Eng.

W. MITCHELL, D. D. S.

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### OBSERVATIONS ON ARTIFICIAL CROWNS.

*To the Editor of the Dental Review:*

SIR:—In noticing the final results of artificial crowns upon natural roots, the observing dentist can not but be impressed with the important function of the dental ligament in assisting very materially in retaining roots or teeth in their natural position.

From observations of the results of my own operations, as well as those of others, I have come to the conclusion in at least two-thirds of the cases where a metal band or cap is used to cover



or encircle the root or tooth, the dental ligament is subjected to more or less injury, this being the case as time elapses, the band, that at the completion of the operation was invisible, becomes in some cases painfully apparent, this I attribute to the elongation of the root, and possibly a slight recession of the gingival margins of the gums, both being brought about by the aforementioned injury inflicted when the cap or band is driven home. Any one with any experience will know that this state of affairs does not result where the old fashioned wood pivot is used, or in fact any class of pivot minus the band. It seems to me that in our endeavors to make the most permanent and cleanly operation—for there is no doubt but the stamped gold cap, or the porcelain faced gold cap with platina pin are the best things in the way of artificial crowns—we promote a source of distrust in our minds as to the durability and satisfactory nature of our operations, no matter how artistic or beautiful the immediate results may be.

W. MITCHELL, D. D. S.

London, Eng.

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## REVIEWS AND ABSTRACTS.

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A Laboratory Manual of Chemistry, Medical and Pharmaceutical, with original illustrations, by Oscar Oldberg, Ph. D., and John H. Long, Sc. D., pp. 436, W. T. Keener, publisher, Chicago, 1887. Price cloth, \$3.50.

The volume before us is neatly printed and substantially bound and contains within its covers, fine full-page plates of crystalline substances, and various abnormal pathological products, including pus corpuscles, hyaline casts, spermatozoa, vaginal and urethral epithelium, needles of tyrosin, spheres of leucin, uric acid crystals, sodium urate and other matters found in the urine, all of which will be of great benefit to students and physicians making examinations of urine. The work is concisely written and must prove of great value to all workers in the chemical laboratory. The authors state in the preface that the "Object in preparing this Manual was to provide in convenient form a sufficient number of suitable lessons in laboratory work,

and at the same time to embody in the book the facts of inorganic chemistry most important to pharmacy and medicine." They have succeeded most admirably in their laudable effort, as anything which will give an easy, but certain method in synthetical work will be endorsed by physicians and pharmacists generally. The chapters on urine analysis and qualitative analysis will explain themselves to those interested. Every dentist has need of such a work as this, if he be a student of pathology, or wanders in the fields of microscopy, chemistry or inorganic materia medica.

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TRANSACTIONS OF THE CALIFORNIA STATE DENTAL ASSOCIATION at the 13th, 14th, 15th, 16th, and 17th annual sessions, held at San Francisco. Women's co-operative printing office, 1886.

This book contains 520 pages of reading matter, devoted to business, essays, and discussions. The essays and discussions throughout the volume assume an air of scientific attainment, which makes them both interesting and instructive to the general reader. A striking feature of the work is the interest manifested by members in discussing the various subjects presented. Two of the papers are somewhat optimistic, and yet may be within the realms of a future possibility. It would not be a book unless it contained something whereby practices and opinions widely differ.

The volume is considerably marred by having certain unsavory business matters appear, which could well have been omitted, and we have no hesitancy in drawing the publication committee over the coals for permitting such "stuff" to be published in a book that is in every way creditable.

We can see no reasonable ground for accumulating papers, and depriving members of the use of them for so long a time. The transactions, to be of benefit, should be published each year.

## DENTAL COLLEGE COMMENCEMENTS.

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BOSTON DENTAL COLLEGE.

The twentieth annual commencement exercises of the Boston Dental College were held at Parker Memorial Hall, Boston, Mass., on Wednesday evening, June 22, 1887, at 7:30 P. M. The valedictory address was delivered by George A. Billings, D.D.S. The President of the college, I. J. Wetherbee, D.D.S., conferred the degree of Doctor of Dental Surgery, on the following named (8) gentlemen:

Bonnell, Walter Percival; Billings, George Albert; Bulger, Augustine Joseph; Fellows, Horace Emmons; Hills, Henry Martin; Ingraham, Shirley Carolus; Sanborn, John Monroe and Woodbury, Charles Elmer.

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HARVARD UNIVERSITY—DENTAL DEPARTMENT.

The commencement exercises of the Dental Department of Harvard University were held on Wednesday, June 29th, 1887. The degree of Doctor of Dental Medicine (D.M.D.) was conferred on the following named (14) persons: Peter Crank, L.D.S.; Carroll Ketcham Huntley; Leslie Maxwell; Edwin Leslie Shattuck; Frank Ellsworth Sprague; Henry Jacob Stark; Edgar Fremont Stevens; Arthur Henry Stoddard; Charles Henry Vee; John Daniel Wilson; Henry Eugene Windsor; Thomas Weston Wood, A.B.; Harvey Warner Woodbury; Charles Frederick Wright.

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UNIVERSITY OF MICHIGAN—DENTAL DEPARTMENT.

The following are the graduates of the class of 1887 of the above named institution:

Doctors of Dental Surgery—Ernest Lee Avery, Frank Covington Babcock, Gilbert Eli Corbin, M. D., Almon Dewhirst, Edward Lincoln Dillman, Elmer Llewellyn Drake, Fred William Gordon, Almer Myron Harrison, David Alexander Harroun, Harry Duncan Heller, James Bailey Hoar, Fred Adolph Kotts, Cyreno N. Leonard, John Thomas Martin, Lewis Henry McDonald, George Hart Miner, Joseph Lawrence Nordike, Edward Everett Paxson, William Arthur Powers, William Daniel Saunders, Frank Leslie Small, Eva Claire Smith, Clarence John Burr Stephens, James C. Stevens, Patrick James Sullivan, Charles Henry Worboys, William Adelbert Wright.

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TO THE EDITOR OF THE DENTAL REVIEW :

*Dear Sir:*—Will you kindly inform me what is the status of the D.D.S. or L.D.S. in regard to admission to the Dental Section of the International Medical Congress, and whether the recent action of the American Medical Association will allow the D.D.S. to become an active member of the Congress or any other medical society.

"GRADUATE."

[The resolution offered by Dr. N. S. Davis and published in our June number states "that the regular graduates of such dental and oral schools and colleges, as require of their students, a standard of preliminary or general education, and a term of professional study equal to the best class of the medical colleges of this country, and embrace in their curriculum all the fundamental branches of medicine, differing chiefly by substituting practical and clinical instruction in dental and oral medicine and surgery, in place of practical and clinical instruction in general medicine and surgery, be recognized as members of the regular profession of medicine, and eligible to membership in this association on the same conditions and subject to the same regulations as other members." From a careful reading of the above it may be seen that the graduates of dental schools, where no preliminary examination was exacted on entering the school, are debarred. We also take it to mean that dental schools, not teaching general anatomy, physiology, chemistry, pathology and materia medica, are debarred. Further, the resolution implies that dental graduates in order to be recognized must have studied three years prior to coming up for graduation. This will leave out the graduates of all of the two year schools. In order to become members of the American Medical Association, dentists will have to become members of local or state medical societies and then they can be sent as delegates, or they may become members by application, on the recommendation of the president and secretary of the local society, that they are in good standing. They must necessarily subscribe to the code of medical ethics. We presume that any regular graduate of a dental school, may attend the International Medical Congress, and become a member of any section under the above resolution, as no law can become retro-active when enacted by the State, and a voluntary organization, like the American Medical Association, could hardly do anything so unjust as this would be, unless it were so stated in the resolution.—Ed.]

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TO THE EDITOR OF THE DENTAL REVIEW :

*Sir:*—In the treatment of pulpless teeth it sometimes happens that a small portion of the nerve broach is broken off within the root canal. I have had such an accident happen two or three times and have always had to spend an hour or so in drilling and working to recover the fragment. Is there not some acid or salt that can be used to remove the broken piece of steel, and still not injure the integrity of the tooth?

Respectfully,

I. O. F.



TO THE EDITOR OF THE DENTAL REVIEW :

*Sir*:—In the May number of the REVIEW I saw a query about perfuming the rubber dam. I have pursued a method which has proven very satisfactory. The dam should be generally kept in a dry cool tin box and with it may be placed a package of sachet powder such as may be had in any drug store, or the box may be lined with a soft cushion in which the powder can be distributed.

Respectfully,

X. Y. Z.

[The rubber dam should always be washed before using, and we generally pour a few drops of Sweet Alyssum Water into the basin while this is being done. This leaves an agreeable perfume.—ED.]

TO THE EDITOR OF THE DENTAL REVIEW :

*Sir*:—Since it has been resolved that regular graduates in dentistry will be recognized as specialists of medicine by the medical profession the following questions arise and possibly many more :

Can dentists practice medicine with only a dental diploma?

Can physicians practice dentistry with only a medical diploma?

Will the regular graduates in dentistry be presented with medical diplomas, if not, how can they be members of the medical profession?

Will the dental law of the different States be modified, for example Missouri. Section 1, "It shall be unlawful for any person to practice dentistry, or dental surgery, in the State of Missouri, without having received a diploma from a reputable dental college or a university duly incorporated or established under the laws of some one of the United States or of a foreign government.

*Provided*—That nothing in this act shall be so construed as to prevent physicians, surgeons, or others from extracting teeth." How can the dentists be specialists of medicine without a medical diploma?

Will the dental colleges be abolished?

Will the medical colleges have the chairs of operative and mechanical dentistry in the future?

Will the American Dental Association be abandoned?

Will the dentists attend the American Medical Association instead?

Will there be any more state or city dental associations or societies or will these meetings be held with the medical state or city associations or societies?

All other specialists of medicine meet at medical associations and societies—will dentistry be an exception?

How will the course of study of the dental schools be lifted up?

Will it be by the professors of medical colleges, that have dental colleges attached and teaching the medical branches to dentists, taking more interest in the dental students than formerly?

Will the dentists now that they are recognized by the medical profession, feel that they are ONE ahead of the medical men having an extra title.

Will the title of D.D.S. be dropped and only the title of M.D. be known in the future?

With regard to the administration of anæsthetics (in the State of N. Y.) will the dentist have to call in a graduate of the regular medical college in the future?

M.D., D.D.S.

TO THE EDITOR OF THE DENTAL REVIEW :

*Dear Sir:*—Will some reader of the REVIEW describe a method of retaining loose teeth—especially the anterior lower—firmly in position during treatment for pyorrhœa alveolaris, and for some time after treatment. I have heard something of using gold wire and leaving it for months. What size and carat wire should be used?

Yours truly,

D. N.

[We have been using 10, 12 and 14 carat gold wire, rolled down to the diameter of ordinary binding wire.—ED.]

## MEMORANDA.

Dr. J. Rollo Knapp is in Europe.

In 1886 there were 79 dental patents issued.

Dr. J. F. Austin, lately a resident of Chicago, has removed to California.

Dr. Frank A. Hunter, of Cincinnati, has gone to Europe for the summer.

There are about 600 dentists in the State of Indiana and only 108 of these are graduates.

Dr. W. H. Stephenson, of Wabash, Ind., was present at the last meeting of the Chicago Dental Society.

There were about 155 dentists present during the recent meeting of the Missouri State Dental Association.

The Chicago Dental Club gave a Clinic at the office of Drs. Haskell and Ludwig Monday afternoon June 27.

The Tennessee Dental Association met at Clarksville, Tuesday, July 5, under the presidency of Dr. H. E. Beach.

We are indebted to the American Dental Mfg Co. N. Y., for the use of the cuts illustrating Dr. Black's pluggers.

St. Louis is to have a new dental college in connection with the College of Physicians and Surgeons of that city. Next!

The annual meeting of the State Dental Society of Maine, will be held at Waterville, Me., commencing Tuesday, July 19th.

Dr. N. Senn, of Milwaukee, is writing some interesting letters on surgery, etc., for the *Journal of the American Medical Association*.

Drs. W. B. Ames, Garrett Newkirk, and J. W. Wassall have been elected to professorships in the Chicago College of Dental Surgery.

W. Taft, M.D., of Cincinnati, O., will fill the chair of operative dentistry in the Northwestern College of Dental Surgery, next winter.

Oregon has passed a law regulating the practice of dentistry. Dr. S. J. Barber, formerly of Chicago, is a member of the board of examiners.

The Illinois Dental Manufacturing Co. of Chicago, was incorporated July 12th, 1887. Capital stock, \$10,000. This means another dental depot, we presume.

Subiodide of bismuth and iodized starch, are coming into favor as surgical dressings on account of their blandness, and potency as disinfectants and antiseptics.

The annual meeting of the National Association of Dental Examiners will be held at Niagara Falls, on Monday, August 1st, 1887, at 3 p.m. Fred. A. Levy, secretary.

Dr. L. M. James of the firm of Watling & James, Ypsilanti, Michigan, was married on June 22d to Miss Eva Hallock of Ann Arbor. Accept our congratulations.

Dr. D. D. Magill of Erie, Pa., has been visiting his Chicago friends and classmates. He also played the part of "best man" at the weddings of two of Chicago's fair daughters.

There are to date 27 legalized dental schools in the United States, with about 3500 graduates. From 16 of these schools 1196 matriculated last year, and 478 graduated this spring.

The American Dental Society of Europe will meet in Coblenz on the Rhine, Thursday, September 1st, 1887. E. P. George of Frankfort is president and E. A. Galbreath, Hanover, secretary.

The Indiana State Board of Dental Examiners is composed of the following gentlemen. Dr. P. G. C. Hunt, Dr. M. H. Chappell, Dr. E. J. Church, Dr. S. T. Kirk, and Dr. R. Van Valzah.

Dr. Chas. H. Thayer has sailed for Germany, to be absent for one year. The doctor is suffering from nervous prostration and a complication of ailments, due to a too close application to his practice.

Field—Campbell. Miss Jessie, daughter of Dr. George L. Field of Detroit, was married to Mr. John R. Campbell of Detroit, on June 15, 1887. The newly wedded pair have our best wishes for future happiness.

The seventeenth annual session of the New Jersey State Dental Society will convene at the Coleman House, Asbury Park, Wednesday morning, July 20th, 1887, at ten o'clock, and continue in session until final adjournment.

Dr. Geo. W. Whitefield of Evanston, Ill., has placed us under obligations by furnishing some burs with cutting blades much farther apart than those in ordinary use. They are to be used at a high rate of speed in order to be effective.

There were fourteen visitors from Illinois at the late meeting of the Indiana State Dental Association, one from Pennsylvania, one from Ohio, and two or three dental goods houses had exhibits including that of the Detroit Motor Co.

The Wisconsin State Dental Society has issued an interesting programme for the seventeenth annual meeting which will be held in Milwaukee, beginning Tuesday, July 19, and continuing for three days. Dr. R. G. Richter is the master of clinics.

Under the new law recently passed in Indiana, up to June 30th, 598 dentists had registered; 45 candidates appeared before the board of dental examiners for license to practice, 15 of the number passed a satisfactory examination and were licensed.

To facilitate the implantation of teeth, Dr. Louis Ottofy, of Chicago, has devised a new instrument, combining all of the best points of the Younger, Walker and Rollin's instruments, while it at the same times eliminates the objectionable features of each.

The National Association of Dental Faculties, will meet at the Ebbitt House, Washington, D. C., Saturday, September 3, 1887, at ten A. M. By order of the Executive Committee. C. N. Pierce, Philadelphia, is President, and H. A. Smith, Cincinnati, Secretary.

Drs. S. A. Freeman of Buffalo, N. Y., E. C. Moore of Detroit, Mich., and J. W. Wassall of Chicago, have been appointed the local committee of arrangements of the coming meeting of the American Dental Association to be held at Niagara Falls, August 2d, 1887.

The State Board of Dental Examiners of Indiana, under the new law recently adopted, is composed of the following gentlemen: R. VanValzah, Terre Haute, S. T. Kirk, Kokomo, E. J. Church, LaPorte, M. H. Chappell, Knightstown, and P. G. C. Hunt, Indianapolis.

The following officers were elected at the recent meeting of the Indiana State Dental Association. Pres. Dr. W. N. Wilson, First Vice Pres. Dr. J. B. Morrison, Second Vice Pres. Dr. T. A. Goodwin, Rec. Sec'y. Dr. R. W. Van Valzah, Treasurer Dr. Merritt Wells.

The spring term of the Chicago College of Dental Surgery closed Wednesday, June 22. The Infirmary remains open for the treatment of patients, however, and a number of students will avail themselves of the opportunity to increase their knowledge and skill in practical dentistry.

Five parts of phenol dissolve in 1 part alcohol; 4 parts in 1 part ether; 3 parts in 1 part chloroform; 7 parts in 2 parts glycerin; and 4 parts in 7 parts olive oil. Solutions containing any desired proportion of phenol may be made by the use of glycerin, water and alcohol.—(Oldberg and Long.)

Communications, suggestions, essays, papers and voluntary contributions on dental education, literature and nomenclature are in demand, and they should be sent either to the chairman Dr. W. H. Atkinson of New York City, or Dr. Louis Ottofy, Chicago, secretary of Sec. II of the American Dental Association.

**DETROIT DENTAL SOCIETY.**—At the annual meeting of the Detroit Dental Society, held June 8th, the following officers were elected for the ensuing year:

President, Dr. E. C. Moore; vice-president, Dr. H. H. Jackson; secretary, Dr. Wm. Cleland; treasurer, Dr. James Cleland; Member of board of censors, Dr. Geo. L. Field.

Recently the Dental Department of the Northwestern University at Chicago, was incorporated in the State of Illinois, no capital stock, and for instruction in



dentistry. Incorporators: A. E. Baldwin, Charles R. Baker, John S. Marshall Arthur B. Freeman, Charles P. Pruy, Roscoe F. Ludwig, Loomis P. Haskell and Eugene S. Talbot.

In the May number of the *Deutsche M. f. Z.*, appears a review of a number of articles written by the editor of the REVIEW, and published at various intervals in the *Independent Practitioner*. The condition of dentistry in England and Germany, as described by the writer, is carefully and critically reviewed, and on the whole favorably commented upon.

Dr. D. B. Freeman of Chicago, has invented a clamp to facilitate the filling of labial and lingual cavities in teeth. He proposes making two or three sizes. It is easily adjustable to the superior incisors, nearly all cuspids and bicuspid. He says: "I claim it is superior to all other devices for this purpose, inasmuch as it can be more universally applied without adjustment of thumb screw, and retains its hold tenaciously yet simply."

HONORS CONFERRED.—Dr. Gustav A. Klare of Leipzig, Germany, was elected an honorary member of the Dental Society of Central Germany. *Hofzahnarzt* Schneider of Erlangen, Germany, at the hands of His Highness the Prince von Russ, the silver Medallion of Honor, which is associated with the Prince Russ's Cross of Honor; the same gentleman was also elected a corresponding member of the Dental Society of Saxony.

The University of Michigan, has just celebrated its fiftieth annual commencement and the programme of exercises shows that considerable effort has been put forth to make the anniversary one long to be remembered by the Alumni. Mrs. Kate C. Moody, D.D.S. of Mendota, Ill., read the address to the Alumni and students of the Dental Department, while the usual class exercises were carried out by various members of the graduating class.

HORSE DENTISTRY.—A number of dentists witnessed the excising and filing of a horse's teeth the other day at Plymouth, Ind. The operator used his hand as a guide in the cutting of the sharpened edges of the molars, which were irritating the soft parts of the mouth. The teeth were then filed smoothly with a broad flat file about 15 inches long. The horse bore the operation with "horse sense," which is more than can be said of some people.

In a note to the Editor, Messrs C. Ash & Sons, London, quoting from a letter published in the February REVIEW, page 216, some remarks by our correspondent on English teeth, say: "We have made *open crown* bicuspid and molars for vulcanite work for the last fifteen years, which we will be happy to show '78' if he will call." Samples of these teeth were enclosed in the letter, which we think might be used in vulcanite work to the entire satisfaction of both patient and operator.

While on a short visit to Kansas City lately, we had the pleasure of viewing the various places of interest in the "Chicago" of the west, in the company of Dr. R. I. Pearson, who is the enterprising proprietor of the Kansas City Dental Depot and the publisher of the *Western Dental Journal*. Dr. Patterson the editor has gone and got married without letting us know of it, and we had a double pleasure in shaking hands with both the doctor and his wife, as well as that of Dr. Hungerford one of the associate editors of the *Journal*.

At the recent meeting of the Kentucky State Dental Society, the following officers were elected for the ensuing year:

President, Dr. W. S. Smith; Vice-President, Dr. J. H. Baldwin; Recording Secretary; Dr. C. E. Dunn; Treasurer, Dr. J. F. Canine; Board of Examiners, Dr. A. O. Rawls.

The next annual meeting of the association will be held at Louisville, in the rooms of the Dental College, the first Tuesday in June, 1888.

AMERICAN DENTAL ASSOCIATION—HOTEL RATES AT NIAGARA.—*International Hotel*—Accommodates 300 guests. Special rates to members and families, \$3. *Prospect Park House*—Accommodates 100 guests. Special rate if double beds are occupied, \$2.50. *Hotel Atlantique* (German)—Accommodates 50 guests. Special rate if double beds are occupied, \$2. *Cataract House*—Accommodates 300 guests. Regular rate (no reduction), \$4. *Hotel Kaltenbach* (German)—Accommodates 50 guests. Regular rate (no reduction), \$3. *Niagara House*—Accommodates 75 guests. Regular rate (no reduction), \$2. *Temperance House*—Accommodates 75 guests. Regular rate (no reduction), \$2.

By a copy of an order issued by von Hergenhahn, the chief of police of Frankfurt am Main, Germany, we notice that the recent enactment in regard to dentists is to be strictly enforced. The law forbids the use of the titles "dentist," "American dentist," "graduated in a foreign country," "graduated *not* in Germany," "Doctor of Dental Surgery," "Doctor," etc., etc., all of which are claimed to mislead the public. In order to be permitted to use any of the above named titles it is essential to pass an examination before the German authorities. Violators are warned to discontinue advertising with cards or otherwise and to remove all signs on or before August 18, 1887, which exhibit any of the above named titles, excepting those duly examined in Germany.

Among other matters of interest as presented in the programme of the Central Society of German Dentists, whose meeting will be held in Berlin, Germany, Aug. first to third inclusive, we notice papers, clinics and questions discussed, covering the following variety of subjects: Are there laws, which regulate the success of filling teeth whose pulps are intact?

The practicability of electric and water motors?

Dental engine, mallet and electric mouth-lamp regulated by a rheostat.

What is the prevailing opinion in regard to the extraction of the first molar at the age of 12?

To what extent is bridge work new and what is its value.

The twenty-third annual meeting of the Missouri State Dental Association was held at Kansas City, June 21st and 24th.

The following officers were elected for 1888:

President, Wm. N. Morrison, St. Louis; 1st Vice-President, T. M. Nicholson, Fayette; 2d Vice-President, J. F. McWilliams, Mexico; Rec. Sec., John G. Harper, St. Louis; Cor. Sec., Wm. Conrad, St. Louis; Treasurer, James A. Price, Weston.

The next meeting will be at Perle Springs, Warrensburg, Mo., the first Tuesday after July 4, 1888.

Hotel Beers, St. Louis, Mo.

WILLIAM CONRAD,  
Corresponding Sec.

Sept 23th 85

Ills

Litchfield

Dear Sirs:—Please give Me your loest prices For putting up platte worke From one to a ful sett of teeth the very best you can doo for me that line To be brieft I would sende My Models to be Made up and finished and ready to be put into the Mouth please anser it to me and oblige

d d S.

This little epistolary gem was sent to us by Dr. McKellops of St. Louis. The sight of it will give the effete east another pang of envy at our literary supremacy.

In the *Deuts. Monats. f. Zahnk.* Al. Chruschtschoff of St. Petersburg, recommends the use of Iodphenolum for the treatment of ulcerous stomatitis. It is prepared by mixing equal parts of tincture of iodine and crystals of carbolic acid. The affected parts should be wiped with a pellet of cotton, and the bleeding thus produced should be checked by rinsing the mouth with cold water, and after having dried the sore, apply the remedy with a camel's hair brush protecting it from moisture until the Iodphenol has become dry, the application may be repeated the second, third and fourth, to which treatment the disease generally yields. As a mouth-wash he recommends the use of a solution of carbolic acid (1-1½ per cent.) in water, adding either rose water or peppermint water to flavor, glycerine also may be used.

The following formula as a mouth wash for spongy gums, stomatitis, or after extraction, will be found quite valuable.

R

Resorcin,	3 ij
Vol. Ext. Eucalyptus,	3 j
Aqua,           ad	℥ iv

M. Rub up with Magnesium Carbonate 3 ij and filter.

Sig. One teaspoonful to tumbler of water, to be used frequently.

In the use of sulphide of calcium in pericementitis or alveolar abscess care should be exercised, as certain idiosyncrasies give evidence of marked eruptive diseases from the action of this drug.

THE AMERICAN DENTAL ASSOCIATION.—All railroads west of Chicago and from Chicago leading to Niagara Falls, and all Southern railroads centering at Niagara Falls, will carry members and delegates of the American Dental Association at one and one-third fare.

Read the rules carefully.—Each delegate must purchase a first class ticket to the place of meeting for which he will pay the regular fare, and upon request the ticket agent will issue to him a certificate of such purchase.

If through tickets can not be procured at the starting point, delegates will purchase to the most convenient point where such through tickets can be obtained, and repurchase through to place of meeting, requesting a certificate from the ticket agent at the point where repurchase is made.

Tickets for the return journey will be sold by the ticket agent at the place of meeting at one-third the highest limited fare only to those holding certificates signed by the ticket agent at point where through ticket to place of meeting was purchased, and countersigned by the secretary or clerk of the convention certifying that the holder has been in attendance upon the convention.



Tickets are good going, three days before the meeting, and returning, three days after its termination.

Equally favorable rates are expected from all eastern points.

A. W. HARLAN, Chairman Executive Committee.

FIRST DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.—New York, June 15, 1887.—Dear Doctor:—It is hardly necessary to say anything, to impress upon you the imperative necessity of co-operation by Dental societies, if members are to be protected from the venal and grasping plans of one class of patentees, and the ridiculous pretensions of another.

If a mechanic invents a MACHINE, which aids a dentist in doing his work, he should be willing to pay a reasonable royalty for its use, in recognition of the public service the man's study and ingenuity have rendered.

But when it is a question of heavy tax, upon much of the best work a dentist may do for fifteen years, no really novel ideas, underlying methods, which, at best are little more than results of good manipulation, it is a very different matter. There is then nothing for an educated dentist to regard as such a positive ADVANCE IN THE ART, as to call upon him to bow in homage to a pretended discoverer.

Without organized backing great results have been achieved in the courts, whereby dentists have been saved onerous tribute by the efforts of a few gentlemen who gave time, strength and money from a sense of duty.

Suppose every dentist in the United States had to pay two dollars or even one dollar for every crown he had or should ever set, during the next fourteen years—or that he could not set one at all, without the consent of some particular man, and on HIS TERMS—would it not be a serious matter?

That position every such dentist would occupy to-day, but for those efforts.

Furthermore, it is believed, that if means had been contributed so that a full and exhaustive defense had been practicable, the Low bridge patent would have met the fate of the Richmond crown patents, in the arena of the Federal courts.

There are to be long and bitter conflicts in the near future. There is a vast amount of hard work to be done in search for evidence, getting it into shape, utilizing and presenting it; to say nothing of correspondence, attendance, hearings, briefs, arguments, reporting, printing, travelling, magistrates' fees, etc., attendant upon a series of legal contests in different sections of the country.

If you desire to resist such attacks upon the profession, it is suggested, that you cannot probably do so more effectively than by manifesting that purpose by proper resolutions and the raising of a fund at once.

If the burden of opposition is left to individuals most likely there will not be much, if any, further effective resistance to the pretensions of determined and unscrupulous patentees.

Very sincerely yours,

(Signed.)

W. W. WALKER, President.



# THE DENTAL REVIEW.

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No. 10

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## ORIGINAL COMMUNICATIONS.

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### THE CEMENTUM—ITS RELATION TO DENTINE.

BY LEVITT E. CUSTER, B.S., D.D.S., SPRINGFIELD, OHIO.

On the sea of the dental profession the subject of the implantation of teeth, like the basking of an aquatic animal, is producing centrifugal waves which not only disturb the equilibrium of the older vessels far out from shore, but they have also reached the boat which the student is endeavoring to launch.

All the different tissues of the animal body are, generally speaking, composed of the same elements. Their anatomical difference, I would say, is caused by the predominance of some one or more of their constituent elements which, in every tissue are, for the most part, arranged in groups. All the soft tissues are characterized by the predominance of hydrogen and oxygen in the molecular grouping as water, and there is usually a subordinate grouping which differentiates the already marked soft tissue. Nerve tissue is characterized as soft by the large proportion of water, but carbon, hydrogen and oxygen, in a molecular grouping as fats, distinguish white nerve tissue from muscle, they each containing 75 per cent of water. On the other hand, the hard tissues are characterized by the predominance of the salts of calcium; but while the amount of carbonate of calcium is about the same in bone, dentine and enamel, each tissue is distinguished as such by the relative proportion of the phosphate of calcium.

In all the tissues there is a third and most important grouping of elements which characterizes all normal tissue; they are—

oxygen, hydrogen, nitrogen, carbon and sulphur—proteins, without which there can be no *life*. These may be denominated the elements of life. Besides these, there are certain conditions of life—motion, nutrition, and reproduction. Any tissue which does not contain these elements as proteins, or by its structure interferes with any one of the above conditions, has a diminished vitality. Density and hardness directly oppose motion; hence, in tissues containing salts of calcium, we find less vitality. In bone, which is characterized by this group of elements, we find a reduced vitality; while, in the enamel of the teeth, both the proteins and the first condition, motion, being reduced to a minimum, the vitality of that tissue is correspondingly reduced. I wish it to be noticed that hardness is incompatible with motion, and that density produced by lime salts is incompatible with the elements of life, the proteins.

It is agreed, then, that the tissues of the body may be divided into the soft and the hard by the replacement of the water by lime salts; also, in an inverse ratio to hardness and density, is the proportion of life and vitality of the tissue. In osseous tissue we have an organic matrix in which sixty-seven parts have been replaced by lime salts. It is possible that, while these salts are in no way compatible with the organic matter, they are yet non-irritant and not destructive to the life of the organic portion. It is evident, furthermore, that, as death is the opposite of life, that as the proportion of lime salts is increased, the less the tissue is in harmony with the soft and more vital tissues; and a point may be reached in the proportion of lime salts that the connection of that tissue with the softer tissues will not serve as a union of any great strength. If this proportion be still increased, a point will be reached, when the organic portion, with its living matter, will be reduced beyond nutrition, at which point the tissue, if such it may be called, is not retained unless it be connected, mechanically, with the calcified portion of some other less calcified tissue.

From this we argue, that, as the union of one tissue containing organic matter and lime salts with soft tissue is through the organic portion, in proportion as the lime salts are increased and the organic portion decreased is the strength of the union of this, with adjoining tissues decreased. In instances where great strength of union is required, as the origin of muscles or tendons,

or in the attachment of teeth, this point is not to be overlooked. In the animal economy, the lime salts deposited in the osseous tissues are in proportion to the needs, and never overreaches that point at which a further deposit of lime salts would weaken the strength of the attachment required.

As before stated, a tissue may have such a proportion of lime salts that it can not be retained in the system by any connection with living tissue, but that tissue, while not an irritant, may be connected with the softer tissues by means of a less calcified structure which contains enough living matter. Now, the connection of this harder structure with the less dense, would not be dependent upon the living tissue, but upon the union of the lime salts with one another. This intermediate tissue—let it be bone—which we know is really tissue, by virtue of its larger proportion of animal matter—is united with the softer tissues while it yet contains salts in a proportion sufficient to unite it with the tissue whose larger proportion of lime salts would not admit of any union with the softer ones. This union of bone then, with the soft tissues on the one side and dentine, let it be, on the other, is accomplished by the union of its animal portion with the soft tissues and its calcareous portion with the more dense tissue. The latter may be looked upon more as a mechanical attachment.

Now if for the performance of a certain function there be required a tissue with such a strong attachment with the surrounding tissues and such a density that the diminished organic portion can not possibly furnish that strength, would it not be economy in nature to unite this tissue mechanically with the osseous portion of another having less lime salts and which can form a union of the required strength with the surrounding tissues? This I claim is the relation that the cementum holds between the dentine and the system.

The teeth have been classed among the hard tissues, and function and adaptation are no less shown in them, than any other organs of the body. In the process of mastication, it is necessary that the organs involved be prepared to not only resist the attrition, but also have a firm attachment. Accordingly we find the teeth, whose substance (dentine) is more dense than bone, protected by the hardest organized structure, and is attached to bone (cementum), through whose interposition it is connected with

the surrounding tissues. Perhaps the attachment of the teeth has not been looked upon in this light before, but it is nevertheless true, and differs from ankylosis in that the "bone of attachment" is separated from the maxilla by a membrane of the periosteal type.

The dentine, enamel, and cementum are considered together as the "tooth" or dental tissues, perhaps because it is these adherent structures which are removed in the process of extraction. Perhaps it is because man extracts more teeth from his fellow-creatures than he does from those fishes and vertebrates which have little or no cementum or enamel. That the dentine itself is the tooth substance proper, its name, development, structure, physical relations and universal occurrence, all go to show. Dentine is derived from the latin, *dens, a tooth*, indicating that this is the essential part. Developed from a special organ from the pars papillary of the mucous membrane in contradistinction from enamel which is developed from the epithelium, a covering and protection for the system, and distinct from the cementum which is developed like subperiosteal bone. Its structure is the most dense of all the tissues except the enamel. Its physical relations point conclusively that it is the tissue intended for the function of mastication in all that that involves; its greater bulk as compared with the accessory tissues, enamel and cementum; its protection by enamel, the hardest animal tissue, and its connection with the system by a layer of bone, the cementum. Its universal presence where teeth are found, while the cementum or enamel and at times both are absent, is the strongest argument any one could desire to prove that the dentine is the part originally intended to subserve the function of mastication, and according to the surroundings and habits of the animal, are the other tissues absent or they attain their highest development. In the study of those teeth, destitute of cementum, we find that part in union with the surrounding tissues to be of the vaso—character, which answers the purpose of an interposed layer of cementum by its relatively large proportion of animal matter, again illustrating the incompatibility of calcareous density with the proteinate—life, and the economy of nature.

Dentine differs from cementum in that it contains 5 per cent. more phosphate of lime which makes it much harder as well as



reducing the proportion of organic matter; but from the foregoing it will be noticed that the strength of the union between the two is no greater than the amount of lime salts in the lesser. Out of 73 per cent. earthy salts in dentine, 68 per cent. will have mechanical union with the full proportion, 68 per cent. of cementum; the other 5 per cent. will be virtually lost by its apposition with the animal portion of the cementum. By virtue of the superior density of these two structures as compared with the soft tissues, this union, although partly mechanical, is perhaps the strongest in the body.

There is a ready union of the organic portion of these two structures. Sometimes the one blends into the other by a gradual anastomosis of the dentinal canaliculi with the lacunae canaliculi; at others there is a distinct line of demarcation caused principally by the interglobular spaces. But however it may be, by virtue of the greater density of these two tissues than of the fibers of the peridental membrane, when the tooth is extracted this membrane is the part that is separated.

The analogy between cementum and bone is very marked. Says Rollett, "Osseous tissue forms in man the principal constituent of the bone of the skeleton and of the cementum of the teeth." Their development is perfectly analogous: that part of the bone next the periosteum being developed as "subperiosteal" from its osteoblastic layer is the same that we find in the development of the cementum from the cementoblastic layer of peridental membrane. Their histological structure is precisely the same in that cementum contains Haversian canals, lamellæ, lacunæ, canaliculi and Sharpey's fibres, which are characteristic of bone, although they are not as uniform in dimensions and occurrence. Prof. Owen has shown that in all animals the texture of the cementum corresponds to the osseous tissue. Those reptiles and mammals whose osseous system contains corpuscles of Purkinje, have cementum characterized by the same bodies. Their physiological anatomy is the same. Says Garretson: "This structure (cementum), so closely resembles bone proper as to be liable to the same diseases of that substance." Let the peridental membrane be irritated and the cementoblasts sometimes take on an increased functional activity, or let it be stripped off by disease or injury and the tooth becomes necrosed. The same condition

may effect the alveolus enclosing the tooth or any other osseous tissue. The chemical composition is also analogous. Says the same author, "it possesses all its chemical elements." The composition of the two are:

	Cementum.	Bone.
Organic Matter	32	33.3
Earthy	68	66.7

I have not been able to find analyses made of different parts of bone, but it is evident that the compact portion underlying the periosteum contains more earthy matter in proportion than does the cancellous, and further, that the petrous bone contains as much or more earthy matter in proportion than the cementum of the teeth. The cause of the apparent difference between cementum and bone as a whole is where at the point of union with the dentine, while it is yet called cementum, it has assumed a character between cementum and dentine. Here the cementum which, on the one hand, by virtue of its osseous nature unites with the peridental membrane in acting as an intermediate layer between the soft tissues and dentine, a much harder tissue, on the other hand changes from an osseous to a dentinal character, both in becoming more compact and having its lacunæ replaced by dentinal canaliculi.

The analogy between the peridental membrane and periosteum is so apparent that it is often called "periosteum." The cause of the small difference is that its outer layer instead of being in contact with muscle or fascia is attached to bone, hence a structure on both sides of this membrane exactly resembling the inner layers of periosteum where it is attached to bone. So it is modified in this respect from ordinary periosteum by its relations. Lining the side of the alveolus are formative cells named "osteoblasts," and lining the cementum are the same kind of formative cells but named "cementoblasts." These have the same relation to the cementum that the osteoblasts have to the bone. In the middle of this membrane are fibres precisely analogous to the periosteal ribbons adjoining the osteoblasts, and they, being at one end connected with or directed into the bone as perforating fibres and connected with muscle or tendon at the other, it is not surprising that those fibres on the cemental side should join those coming from the opposite in order to make a strong attachment, if the membrane be double as Dr. Ingersoll and

Spence Bate insist; or, if it be a single membrane, a prolongation of the fibre until it reaches the alveolus which it joins in a similar manner to that of the cementum. It is well known that the alveolar process differs from other compact bone by approaching more nearly cancellated bone, while the cementum is much more dense: now the periosteum, I will call this membrane here, which connects these two in order to make a more firm attachment, approaches more nearly the relative structures of these two tissues; hence, we find coarse fibres and large cells adjoining the alveolus which gradually become smaller as they are traced towards the cementum, and hence the idea of a double membrane by some, and a specially organized structure by others.

In all these properties we notice a very striking resemblance between cementum and bone, and the peridental membrane and periosteum; also we notice that the difference that does exist is simply the effort of the tissue and nature to form a continuity of structure with the surrounding tissues.

The well-known resemblance between dentine and ivory is so marked that dentine has at times been designated the "ivory" of the teeth and the odontoblastic layer the "*membrana eboris*." But the dentine itself can not form an attachment with the soft tissues strong enough to withstand the force of mastication. This tissue has a capacity of 28 for organic matter, which amount is sufficient for its nutrition but not for any great strength of attachment. It has been shown that when a peg of ivory has been inserted in the soft tissues no union takes place, but the ivory is either absorbed or is encysted, no continuity being established; it is apparently as heterogeneous as porcelain which has also been tried.

Then on the other hand let a tooth that has been out of the mouth for any length of time, but which still has an adhering coat of cementum, be implanted in the tissues, and union ensues, although very often followed by absorption, probably due to the inability of the granulation tissue to take the place of the old organic portion. If the tooth be replanted before the death of the organic portion the chances of absorption are less, the animal portions uniting by first intention. Hunter and Owen have noted the facility with which a tooth becomes attached to the comb of a cock. This property of the cementum has been shown quite



recently by the implantations and transplantations of Dr. Younger as well as in the time of him who knew no better methods and whose door-post doubtless bore the inscription, "Teeth Replanted without Pain." One instance in particular marks this property of the cementum in distinction from the dentine. In fitting the tooth the cementum had been removed on either side of the root exposing the dentine, union did not take place at these points and the case was not a success from failure of the granulation tissue to unite with the exposed dentine. This union with cementum and not with the dentine is caused by the large capacity for new granulation tissue in the one and not in the other. Whether these operations are permanent or not, they point to the fact that cementum is a tissue peculiarly adapted to form a union with soft tissues on the one side and hard tissues on the other. Dr. Black says, "union with cementum may take place in three ways: First, if recent injury or loss of vitality, by first intention of the peridental membrane with the remaining animal portion. Second, after lost vitality, the granulations are supposed to grow into the old canaliculi. Third, also after lost vitality, an absorption of the old tissue followed by new granulations." To the objection that these are dead tissues and union is only mechanical by means of large excavations, I would point to the fact that the enamel of an erupting tooth forms no union with the surrounding soft tissues; that when the tooth is fully erupted, although the soft tissues extend beyond, they are attached only as far as the cementum.

A point in regard to the nomenclature of this substance is that as a cement is always placed *between* two substances the wrong tissue has been named "cementum" or as I wish to convey by this thesis, the so-called cementum is the proper connective tissue between the tooth proper and the system — not the peridental membrane as is usually so regarded. If the dentine can not form an attachment of sufficient strength with the soft tissues, but it can with cementum, which is no more nor less than subperiosteal bone and which readily forms a continuity of structure with the soft tissues, then the cementum instead of the peridental membrane is to be regarded as the part which directly connects the tooth with the system.

I would not change the minds of the great men of this pro-



fession regarding the office of this very important structure, but I have endeavored to show the relation between earthy salts and animal matter and life; to point out the analogy between bone and cementum and its means of union with other and softer structures; and to show that it is by the selection of this tissue that dentine, the tooth proper, is enabled to form a continuity from the more heterogeneous to the softer tissues of the body.

[NOTE BY THE EDITOR.—This paper is a thesis presented to the trustees of the Ohio College of Dental Surgery for the diploma of Doctor, and we like to encourage all young men of ability and hence the thesis is published.]

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### CAPPING EXPOSED PULPS.

BY GEO. H. CUSHING, CHICAGO.

In the ten minutes allotted to this paper the endeavor will be, very briefly to outline the following points, viz.: the natural limitations of conservative treatment of the dental pulp—

The reasons why there is as yet so great a diversity of practice; the methods advocated by some of our best men; the necessary steps to be taken in order to secure the greatest likelihood of success, and some suggestions as to the probable causes of failure in many cases.

There would seem to be no reason from a physiological standpoint, why exposed pulps should not be successfully treated and capped, but there is one anatomical peculiarity of these organs that places them in a somewhat different category from other organs or tissues of the body, which unquestionably limits the possibilities of conservative treatment.

This peculiarity lies in the fact that the pulp is located in a cavity with absolutely unyielding walls, while its vascular and nerve supply enter it through a very minute opening in the same dense structure, so that any swelling, from inflammation or other causes, would produce greater or less constriction of the vessels of the pulp at the point where it is most essential that the blood and nerve supply should be uninterrupted and unimpaired.

Perhaps there is no one thing so difficult to do as to outline a comprehensive conservative treatment of exposed pulps which

would be endorsed by a majority of the best men in the profession.

This is a confession that there is no well-established method which is based on scientific principles and which is justified by *general* experience.

The methods of treatment are various, as advocated by different leading men, and are followed by the mass of practitioners blindly, because of their faith in the advocate who happens to be the favorite.

The chief and perhaps only reason why there is not some well-established practice is to be found in the fact, that as a profession, we are not scientific in our methods of observation.

We do not record our cases as we ought, we do not watch them with sufficiently critical care and do not make sufficiently copious notes concerning them, but trust too much to memory and *guess* too much about general results. The most conscientious observers will sometimes greatly err when trusting to memory to furnish the data upon which to base opinions.

Then again it must be borne in mind that there are comparatively few men who are competent for scientific observation, who see all aspects of a case, and see them without bias.

Some men are over sanguine, and can see no failures — from their own hands — others are not competent to recognize a certain class of failures when they do occur, others again are dishonest and deny failures when they know they have occurred.

Until we can secure the coöperation of a number of earnest and properly qualified men to experiment scientifically in this direction we are likely to have no well settled method of practice, and were we to secure these men to do this work, years would have to elapse before their conclusions could be verified.

There are two methods which are probably generally pursued — distinguished by the names of the material used for the capping, the one, the older, being oxychloride of zinc, the other the oxyphosphate of zinc.

Oxychloride of zinc has been used more or less since introduced by Dr. Keep of Boston in 1858 or 59, but it came prominently to the front about 1866 through the advocacy of Dr. W. H. Atkinson of New York, who claimed for it extraordinary success.

For some time this method was pursued very extensively and with apparently gratifying results, but later there came to be a reaction, and so many cases that were supposed to have been successful, proved otherwise in the lapse of time, that the oxychloride of zinc came to be regarded by many as the cause of these failures.

Its use was frequently attended with great pain and many believed it to be too irritating, and that its irritating property was the inauguration of conditions which culminated in the death of the organ, though Dr. Atkinson claimed at one time that the pain and irritation were desirable features.

However, very many believed that something less irritating should be used, and it was supposed that it had been found in the oxyphosphate of zinc, and exposed pulps were capped with the latter material almost as extensively as they had before been with the oxychloride, and at first it was supposed with greater success than by the former method. Time however, which tests all these methods inexorably, seems to have demonstrated that this material is no more to be relied upon than was the oxychloride !

These experiences very naturally suggest the inquiry whether the causes of failure are chiefly to be sought in the material used for the capping ?

It is more than probable that the limitations imposed by the peculiar anatomy of the pulp before referred to, has more to do with many of these failures than the material employed.

When there has been inflammation, or even irritation of the pulp, it is very probable that in many cases some permanent injury is effected by reason of the constriction of the nerves and vessels passing through the minute foramina and canals, which though seemingly cured at the time of the operation, yet develop sooner or later—sometimes after years, sometimes in a few months—a condition which results in the death of the organ. We can not know what conditions are present in the pulp except as outward symptoms indicate, and though a pulp may remain quiet and seemingly healthy for several years, yet its death may occur at any moment.

It may very properly be said that the capping of an exposed pulp is always an experiment—frequently justifiable and giving strong grounds for hope in its success—but still an experiment.

But the methods pursued must of course have a decided influence upon the results. The most judicious and skilfully performed operations *may* fail, but those that are careless and slipshod are quite *sure* to.

The following may briefly describe the methods to be pursued:

The tooth should be isolated by means of the rubber dam. The cavity should if possible be opened so as to give a good view of its entire interior.

The debris and softened dentine should be carefully removed without impinging upon the pulp and without producing pain, if possible — and this is possible more frequently than many are aware.

The cavity should then be saturated with pure wood creosote, which should be allowed to remain a few moments to become absorbed, when the cavity should be very carefully dried, and a drop of Fletcher's carbolized resin should be placed over the point of exposure and left for two or three minutes, when the excess should be dried off with bibulous paper and then the whole surface of the cavity, which is to be covered with the capping material, should be varnished with copal dissolved in ether. When this has hardened, which will be in a few minutes, the capping, either of oxychloride or oxyphosphate of zinc, should be *flowed* over the point of exposure to the depth or thickness desired. The capping material should never be *forced* into place, for injury may and is almost certain to follow any compression of the pulp. When the capping is sufficiently hardened, the filling, either temporary or otherwise, may be proceeded with.

These instructions pre-suppose, of course, that the pulp is in a healthy condition.

As some of the other papers will doubtless consider quite fully the treatment of diseased pulps prior to capping, this paper will only refer to the matter in a general way.

Diseased pulps should be treated for whatever condition presents itself, on general principles, just as other tissues or organs are treated under like diseased conditions. The idea that all exposed pulps should be treated alike, or with the same remedies, is preposterous.

The causes of failures in many cases may justly be charged to the anatomical limitations before alluded to, a point which has



never been sufficiently recognized and which should always be borne in mind in any calculations as to the chances of success.

Over this cause we have no control, but there are other causes of failure, within our power to modify, and these are, want of care and thoroughness in details. It should never be forgotten that in the treatment of exposed pulps more than in any other special operation, the least neglect or carelessness is likely to prove disastrous.

As to the chances of success in this operation it may safely be stated that after the age of twenty-five, the chances are small, even with recent exposures and healthy pulps.

Under that age, all cases in which there has been inflammation, though they may seem to do well for awhile, are to be regarded as liable at any time to fail, while in those cases where there has been sloughing of any portion of the pulp, failure is to be expected in a large majority of cases.

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#### CAPPING EXPOSED PULPS AND THEIR CONSERVATIVE TREATMENT.

BY A. W. HARLAN, M. D., D. D. S., Chicago.

**DEFINITION.**—By the term exposed pulp is meant a condition whereby the dentine is removed from its surface, wholly or in part, generally limited to some portion of the crown or neck of the tooth. This accident is either the result of caries, fractures of the tooth, accidental exposures in operating, or the deliberate removal of softened dentine.

What is a pulp? A tooth is composed of enamel, cementum, dentine, and a highly vascular organ called the pulp; it is enclosed by dentine save at one point, the apical foramen, where the cementum surrounds it. It is the remains of the dentine bulb and the external layer of cells, adjacent to the dentine, are called odontoblasts, from whence may be seen to penetrate the dentine, the dentinal fibres. The pulp has a coronal outline resembling the shape of the crown, gradually lessening in size, and taking on the shape of the root or roots until it terminates in a minute thread, passing on to its connection with the blood vessels and nerves from whence it derives its vitality. The pulp has no tactile sense, although it is a very sensitive organ and teeth containing

living pulps are sensible of thermal changes. Acids, alkalies and sweets profoundly impress it; likewise, extreme dessication, and the electric current. Containing as it does both blood vessels and nerves, it may become inflamed, congested and strangulated. So many changes, from its normal condition, have been noted, that it is barely necessary to state that it may become atrophied, calcified, sclerosed, mummified, hypertrophied or it may suppurate or die at times without warning. As caries approaches the pulp, the tooth often becomes sensitive to pressure of mastication, when food is pressed into the cavity or a tooth-pick is used to remove it. The patient generally has an uneasy feeling, which increases until the tooth aches, when he usually seeks relief by using medicaments himself or applies to the dentist for the same purpose. In an ordinary practice not more than twenty per cent. of such cases will be found to present an actual exposure of the pulp, even after the removal of food and the softened dentine. All such cases, when the patient is in a good physical condition and is not more than fifty or sixty years of age, and no exposure is found, will be susceptible to treatment without destruction of the pulp, if it is protected from thermal changes by the introduction of a non-conductor, which is a non-irritant. My usual practice in the eighty per cent. of non-exposures, is: first to wash the cavity with tepid water, remove the debris carefully, keeping the cavity flooded with eugenol, or equal parts by measure of gum camphor, crystals of carbolic acid and alcohol, or thymol crystals 2 parts, ol. gaultheria 1 part, ol. sassafras 1 part, and 95 per cent. carbolic acid 2 parts, or a ten per cent solution of the alkaloid of cocaine in eugenol. When the pain is arrested, a dressing of either of the above combinations is used, which is covered with soft gutta percha, a solution of gutta percha in chloroform or a plug of cotton soaked in sandarac varnish, to which ten per cent. of resorcin crystals has been added. This is allowed to remain about four days when it is removed, and a dressing is applied composed of deodorized iodoform paste. This is made by taking eighty parts iodoform, five parts pulverized roasted coffee, and fifteen parts oil of cinnamon. The paste is smeared over a piece of punk or paper fibre lint, and made to cover the bottom of the cavity. The whole cavity is then filled with soft white gutta percha, or equal parts of pink

and white gutta percha. After the lapse of two weeks or longer the dressing is removed and the cavity bathed in one of the aforementioned combinations, dried, and the oxysulphate of zinc, in a creamy paste, flowed over the bottom of the cavity, and allowed to harden. It is then varnished with copal-ether varnish, and then oxyphosphate of zinc packed over this, and then gutta percha completes the filling for the time being. If the patient is under thirty years of age the tooth can be filled permanently at this sitting. If a pulp is accidentally exposed by fracture, or when excavating a cavity, in a subject under thirty, the mode of treatment is as follows: arrest the bleeding, apply to the exposure deodorized iodoform, or iodol paste, made of ol. gaultheria and iodol, then cover with oxysulphate of zinc and over this must be placed the copal-ether varnish, then fill at once with gutta percha allowing it to remain not less than 30 days nor longer than 90 days. If the patient is much beyond the thirtieth year, and the tooth is a molar, my preference is to destroy the pulp at once, and run no risk of its death after the insertion of the permanent filling. All hypertrophied pulps as a rule it is best to destroy at once. There are a few exceptions in the very young where I would destroy the fungous growth with chromic acid nitrate of silver or nitrate of zinc, when the eschar separates from the pulp, use eugenol as a dressing or iodoform and eucalyptol made into a paste; sealing the cavity at first for three or four days, then for a week, and afterwards for a period of ten days. Cap in the manner described above. There are many forms of odontalgia and many teeth of young people ache from exposures of the pulp, pulpitis, et cetera. If the pulp needs to be punctured through the cavity in a tooth, unless the person be young (under thirty), there is little hope of its recovery. My method in general is to treat such cases, and those slight inflammations of the pulp in the following manner: first the pain must be arrested, this is done by counter-irritation; paint the gum opposite the affected tooth with equal parts tincture of iodine, tincture of aconite root and chloroform, then apply to the pulp tincture of opium, or iodoform and oil of cinnamon in a thick paste, using no pressure. Cover with cotton, only at least for two or three days. If there is no pain do not remove the dressing for that length of time. When the dressing is changed do

not allow saliva to get into the cavity. Keep the patient's bowels open and let him be directed to care for the tooth, by not eating sweets or anything likely to disturb the dressing or set the pulp to aching. After changing the dressing two or three times the cavity may be gently sealed without pressure. Allow this to remain six days only, for fear that the dressing may lose its potency on account of not being sealed hermetically. Then change it again and seal with soft gutta percha for two weeks; if at the end of this time the pulp has a good color and there is no soreness of the tooth, by percussion, cap as previously directed, but do not fill the main cavity permanently for six months. Many teeth with exposed pulps would do better if they were protected from thermal changes even longer than this. I neither treat nor attempt to cap suppurating pulps, except with arsenic or the forcible extraction of the pulp, under cannabis indica or cocaine-ether. It will be noted that no irritant medicaments are used in my practice in coaxing back to a normal condition an inflamed or slightly congested pulp. They are not needed. A normal pulp is better without contact with such agents. Antiseptic surgery is based on absolute cleanliness, the use of disinfectants, and perfect antiseptic dressings in such solutions or powders as will least interfere with the process of repair, and stimulate the parts locally to that end. Capping and treating exposed pulps is a branch of surgery, and the same general principles should govern us in these minor operations as is kept in mind by the general surgeon, when he is performing major operations, and dressing wounds, or treating surgically any laceration, contusion, or surgical inflammation. The conservative dental surgeon does not attempt to save all exposed pulps, found in the teeth of persons in all conditions of bodily health, but he uses a wise discrimination and only occasionally steps over the border of safe conservatism, in the hope that nature will assist in such laudable efforts to bring about a recovery.

### THE TREATMENT OF EXPOSED PULPS.

By TRUMAN W. BROPHY, M.D., D.D.S., CHICAGO.

The subject of this paper is one which, in its treatment during the past twenty years, exhibits the greatest curiosity in our professional literature. In reviewing the subject, I find methods of



practice advocated which, in my opinion, are not based on sound philosophy.

Having taken issue with the greater number of my professional brethren, many years ago, on the treatment of exposed dental pulps, and in so doing prepared a paper which I read before the Illinois State Dental Society at Springfield, in 1877, I feel that my present views might be well expressed by re-reading selections from that paper, which, together with one from the pen of Dr. E. D. Swain on the same subject, elicited a discussion unsurpassed, if equaled, in the history of the great society named. And while the method employed at that time (oxychloride of zinc capping) was staunchly advocated by the mass of the profession, it has been gradually superseded by others which seem to be more satisfactory.

Whoever attempts to cap exposed pulps indiscriminately will find himself in trouble, exceeded only by that of his patients.

That a tooth possessing a living, healthy pulp is far superior in every respect to one whose pulp is devitalized, removed, and the roots filled according to the most approved modes, all operators will admit.

To obtain the best results in the treatment of exposed pulps, or in the treatment of any other abnormality, the practitioner must take into consideration the constitutional conditions of his patients.

In patients of a syphilitic, scorbutic, or scrofulous diathesis, to cap is exceedingly risky; and when congestion of the pulp has occurred in such subjects, failure is almost certain.

If a healthy patient, under forty years of age, having an exposed pulp, presents himself to me, and the exposure has not been followed by pain except by contact with sweet, sour, or salt condiments, or by thermometrical changes, and the pain has been of a short duration, I would cap the pulp with hope of success. If, however, the patient is over forty and the pulp has been congested several days and is painful, causing nocturnal insomnia, I would devitalize it.

A pulp which has been exposed is very liable to die after it has been capped, no matter who has capped it or what material has been employed in capping.

If it is possible to preserve the vitality of an exposed pulp, the

subjoined treatment will serve. Adjust the rubber dam and with spoon-shaped excavators carefully remove decay from the cavity without wounding the pulp. Use an antiseptic solution, which *is not* an *irritant*, to bathe the cavity. Have the solution of a temperature of about 98 degrees, thereby preventing a shock to the pulp and a congestion of that organ, which might ensue. The solution may be  $2\frac{1}{2}$  per cent of carbolic acid in water; it may be eugenol, or any of the numerous other agents possessing non-irritating antiseptic qualities; the cavity then dried and dusted with iodoform. A mixture of oxy-sulphate of zinc is then prepared to the consistence of thick cream and placed in contact with the pulp so as to cover it and the base of the cavity; upon this a layer of oxy-phosphate of zinc should be placed to make a more firm foundation for the metal filling, which may be introduced at a subsequent sitting.

It is my practice, however, to fill such cavities entire with oxy-phosphate of zinc and permit the filling to remain several months before filling the cavity with gold.

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### CAPPING EXPOSED PULPS.

BY D. M. CATTELL, D.D.S., CHICAGO.

What little I know, of the much there is known on the subject, is soon told. That little comes not from my own theorizing, but is the cream I have skimmed from the rich experiences of those I have been associated with, professionally, who have been long in practice.

We each have our several ways and means of opening up the cavity of decay, removing the debris, and preparing the part exposed for the so-called "capping." Warm water, hatchet and spoon-shaped excavators and carbolic acid are my favorites. After the judicious use of each, the nearly exposed, the slightly exposed or the much exposed pulp is covered over with a layer of oxy-chloride of zinc cement. After said cement hardens, the remainder of the cavity may be filled with whatever is deemed best for each particular case.

Now for the *modus-operandi*.

A patient presents himself to us, the pain is described, we ask a few questions, so as to get at, as nearly as possible, the char-

acter of the pain, the tooth is examined. Having determined to save the pulp, if possible, the cavity is washed out with warm water from a syringe; with excavators the decalcified dentine is carefully removed—the softer portion, not always *all* the decay—circumstances and our judgment must determine how much.

The portion left over the pulp, if any, is thoroughly saturated—*mummified*—with carbolic acid, the 95 per cent. solution.

If the decay is so removed that the pulp is exposed and found healthy—in a normal condition,—the parts are well saturated with the acid, not only to mummify remaining portions of abnormal dentine left, if any; but to coagulate the albumen on the surface of the exposed part, as a protection against morbid influences. It also protects the pulp from the too severe action of the chloride of zinc, which is escharotic.

The oxy-chloride cement is mixed just thin enough to flow from the point of the spatula. The cavity having been dried, it will stick to the dentine more tenaciously than to the smooth instrument. With a little manipulation, it flows or spreads out over the bottom of the cavity and exposed portion of the pulp. No pressure is made on the pulp, and yet no space is left for moisture to collect in from pulp or weeping tubuli.

The action of the chloride of zinc on the tissues, both hard and soft, may give some pain, indeed, often quite severe for 15 or 30 minutes, but eventually it passes away. In the language of Will Carleton: “To properly enjoy heaven you must have first experienced fifteen minutes of hell.”

The exposed pulp that is not in a normal condition, may be badly inflamed only, if so careful treating with local anodynes, internal sedatives and mild cathartics, will so reduce such a condition, usually, that in a few days the pulp will regain normality, and the chances of saving its life by capping are very favorable.

But if the irritation has been great and the inflammation so violent and prolonged that suppuration has commenced, the case may require a much longer time, and antiseptics must play an important part in the local treatment. Nature, here, will assert herself more slowly, and often she will let the treatment go by default, so badly has she been abused.

But if life remains, and a normal condition is finally approached, the capping may be applied, the chances are against

its long life, and so we "remark" in our register that "the pulp will probably die within a year or three." We have given it a chance for life,—if it lives, good! We get the credit; if it dies, take care of the remains, provided its dry bones rattle loud enough to be heard.

The foregoing remarks apply to healthy patients of all ages, but giving the young the preference.

With anæmic, debilitated, over-worked, nearly used up patients from any cause, we use our judgment; circumstances must control our actions. Common sense must be our guide.

Again, a patient presents himself. A pulp with low degree of vitality, from whatever cause, is found alive, but dying slowly, surely, may be as a whole, or sloughing from excessive inflammation. We diagnose that "The pulp will die soon," but said patient is going out of reach of a dentist to-morrow, to-day perhaps, for 1, 2, or 3 months. There is no time for killing the offender and removing the body, and the consequential treatment; neither will it do to leave it as it is. So the cavity is partially cleaned, all loose and soft tissue removed, and the whole cavity is filled with the oxy-chloride cement. Some pain is usually experienced, not always. The patient is dismissed with pretty good assurance that no trouble will ensue for three, or possibly more months.

Now for the reasons for using chloride in preference to the phosphate or sulphate cements, or any other capping, patent, home made, or otherwise.

1st. It is my opinion (though I can not now give authority for it), that there is free chloride given off in the setting process of the cement, and chlorine is one of the best disinfectants we have, hence its special adaptability to parts purifying, i. e., combining with the gases, forming inert compounds, reducing pressure, neutralizing irritants.

2nd. It is a strong, antiseptic, indeed it is the most powerful of all the cements, according to Dr. Miller of Berlin.

An antiseptic dressing we have, then, whose influence permeates the tubuli of the surrounding dentine as well as the pulp, thereby calling a halt to the further destructive process of the septic mass. True, the chemical action there may cause temporary pain, but sick patients must take nasty medicine to neutralize



the poison within them. The atmosphere of the death-chamber is so healthy, so to speak, that life passes away without a struggle, and the body is embalmed. In due time the patient returns, the tomb is opened, the mummy is removed and a new occupant fills the sepulchre.

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#### REMARKS OF DR. B. L. RHEIN ON CAPPING EXPOSED PULPS.

The subject of capping exposed pulps is one of vital interest to all thinking dentists. The main point to be reached at, is, do we save and retain its vitality by the so-called capping process, of a pulp that has been exposed for any length of time. I claim we do not, no matter how skillful or how delicate your fingers may be; any pulp that has been exposed to the deleterious gases arising from the stomach, and food that has accumulated in the cavity of such exposure, is sure to die. It may not die at once, it may live six months, a year, and perhaps two years, but never longer. You must bear in mind what a small, delicate thread a pulp is, how easily its life may be crushed out of existence. The organic matter contained in the decayed cavity of a tooth, the continual flow of saliva into the cavity while forcing its way into the pulp chambers, constantly keeps irritating the pulp, and will cause severe inflammation to set in; in the meantime the microbes have imbedded themselves firmly in the pulp tissues and chamber; you close the orifice by capping; there is no circulation; the gases and microbes begin to do their deadly work. What is the sequel? You will surely see that patient back again in your office, or in some other dental office, for often they have lost confidence in you and will not return to you, but come he or she will, perhaps in a few days, a week, a month, and perhaps not for six months or a year, with a swollen cheek, complaining of terrible pain, loss of appetite and sleep. I had two such cases come to my office only last week, both married women with swollen cheeks, and one of them her left eye nearly closed; both cases were superior bicuspsids; one of them had been capped and filled by a prominent New York dentist eighteen months ago; the other had been capped and filled by a Chicago dentist three months ago. I immediately removed the fillings, opened up the pulp chamber, and the flow of pus and the stench was enough to

drive me away from the chair; both patients felt immediate relief. After thoroughly disinfecting the pulp chambers with per-oxide of hydrogen, I dismissed them until the following day, advising them to apply warm, dry poultices of flaxseed, contained in a bag, to the swelling; diet themselves; keep out of the draft and take a hot foot-bath before retiring at night; the next day the swelling had entirely disappeared. Some of you may claim that these are rare cases. I tell you, gentlemen, that they are not rare, but of everyday occurrence; and every exposed pulp that has ever been capped, or ever will be capped, will most assuredly have the same funeral. You may claim this to be a bold assertion, but this subject of exposed pulps has been a hobby of mine for the past eighteen years. I have investigated, experimented and tested, and I have firmly come to the conclusion that the best method of treating exposed pulps is to devitalize them; for a pulpless tooth, if *properly treated* and *filled* is as good, and will do as much service as any tooth containing a live pulp.

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### USES OF ANTISEPTICS.

Read before the Indiana State Dental Association, June 30, 1887.

By M. H. CHAPPELL, D.D.S., KNIGHTSTOWN, IND.

Septic—Putrefaction. Antiseptic—to prevent, arrest or destroy germs, chemical changes or putrefaction.

Putrefaction—the disorganization of animal tissue, or the formation of new organisms, microscopic or otherwise, relating to corpuscle life.

Fermentation—the action by chemical re-agents as a result of light, heat, etc., and the development of corpuscle life,—bioplasm in vegetable substances. Antiseptic remedies are used to destroy, arrest, or prevent any of the conditions which would result in inflammation, or terminate in suppuration or putrefaction. The terms used, such as putrescence, disinfectants, escharotics, septicæmia, pyæmia, etc., must all be duly classified, and used in their proper order. Antiseptic treatment in wounds is to prevent that condition of the tissues, in its process of repair, either from the ravages of specific inflammation or from what we formerly called granulative inflammation, which did not throw off laudable

pus, and to arrest the process of disorganization—putrescence, gangrene, dry or soft, or the formation of mephitic gas, which is so easily detected by the smell. Therefore, antiseptic treatment is the rational medication of wounds, so as to prevent inflammation and restore the part by promoting the organization of lymph into formative or reparative tissue. This is done by the use of agents that will prevent the proliferation of micro-organisms, which, if developed, manifest their presence, in fever of the parts, leading to inflammation and ulceration.

Antiseptic remedies are of various degrees of strength, some are restrainers, others are destroyers, hence some germs may be developed but rendered sterile by low strength preparations, and are used as preventers or restrainers of disease.

Many of these agents are pleasant, not powerful in action, but limited in their powers as restrainers, while others are no ways offensive, but powerful in action, effective in purpose, and satisfactory in results. The surgeon of to-day who honors his profession, is an enthusiast in the science of antiseptics, or rather anti-germi-sepsis. The germ theory, in the treatment and management of wounds, as well as in disease, and its prevention, is the King of theories in the healing art to-day.

Germicides are the antiseptics for us to consider, investigate, and make practical applications thereof. The surgeon of to-day will not attempt to perform any surgical operation, unless he has the means available that are essential to prevent germs coming in contact with the wound, either from his hands, instruments, atmospheric flocculi, or other means, all these must be antiseptized.

We, as dental surgeons, have operations that result in very unpleasant terminations, and as the conditions for major and minor surgery are the same only in extent, and responsibility, we must be governed accordingly. In the treatment of pulpless teeth, putrescent canals, ulcerating periodontal membranes, alveolar abscesses, pyorrhœa alveolaris, in the treatment of carious cavities in teeth prior to filling, and wounds of the mouth and face, gives us a large field for practice. There are but few, if any mouths, but what are daily offering in some parts conditions for the development and growth of germs either formative or nomadic. These germs may be from an animal or corpuscular origin, owing to their cause, or resting place, while others are

vegetable, and either may produce similar results. It is a known fact that vegetable substances can be anæsthetized and held dormant as the highly organized corpuscle life. Hence we see that some strengths of antiseptics act only as restrainers on germs and will regain life, and may be more definitely fertilized and become aggressive in diseased action. Our pharmacists, and those who take a pride in developing new remedies in *Materia Medica* have given us a long list of antiseptics and germicides. It is not safe to adopt one idea only in thought, or mental philosophy, for it endangers the machinery for developing other thoughts, hence insanity, with its danger and misfortunes; so it is if we adopt "one idea" remedies. We must comprehend the whole and observe that the world moves and the tide flows. Time will not permit a full discussion of this subject, and I will present only a few remedies and their uses.

Bichloride of mercury has for ages been considered too violent a poison to use as a medicament, but as the lightnings are tamed and trained to do our service, so is corrosive sublimate. Its most valuable use is that of a germicide; it is pleasant in use, and reliable in destroying germs and preventing inflammation, thus causing speedy recovery. I use it in various strengths, and it is claimed to be a restrainer, or even a destroyer at  $\frac{1}{50000}$ . For the purpose of practical use the following table of weights of fluids will not be amiss:

1 gallon distilled water 60°	-	-	-	10 lbs.
1 pound -	-	-	-	5,760 grs.
1 ounce -	-	-	-	480 "
1 drachm -	-	-	-	60 "
1 minim -	-	-	-	1 "

#### Apothecaries weight.

Hence the various strengths can be approximated. For irrigating purposes such as washing out with syringe, or flexible syphon, the  $\frac{1}{10000}$  to  $\frac{1}{5000}$  strength is required. For dental use, I irrigate with syringe all mouths that are any way affected with putrescence; warm water, or rather rainwater that has been recently boiled or distilled, is required for the solutions in immediate use in cases heretofore described; and for all carious cavities, the  $\frac{1}{120}$  solution wiped out with pledget of cotton saturated,



then dry with borated cotton, and plaster paris, and bichloride powder. In putrescent canals irrigate with syringe and  $\frac{1}{1000}$  solution, be observant in exploring that no debris is forced through the foramen, and if a discharge is flowing, this must not be checked. Pack the cavity with borated cotton saturated with the bichloride solution, fill mouth of cavity temporarily with oxyphosphate. In pyorrhœa alveolaris, cleanse by removing all extraneous substances, then apply by irrigating with the warm water solution  $\frac{1}{1000}$ .

The stage of disease and its character, will, in some cases, indicate a remedy of different properties, like iodine, or sulphuric acid, as hereinafter mentioned. Some may inquire as to the toxic dangers, and in what would they consist: Salivation, with griping pains, but no fatal results. In no case of dental surgery is there any danger of poisoning. I can not pass this part of my subject without insisting on each of you to become missionaries among your family physicians and surgeons, and inquire of them if they 'have the light' of *antisepsis* in the treatment of wounds, and especially in the use of bichloride of mercury  $\frac{1}{1000}$  solution. If they *have not this light*, proceed to tell them of the "balm in Gilead" and of the wonderful results. When you go home prepare your solutions if you have not already done so; and at once make practical the information you have on the subject. Carbolic acid possesses various properties, escharotic, germicide, germ restrainer, disinfectant, antiseptic, and stimulating, in accordance with the strength used. We have observed the application of carbolic acid full strength, to putrescent canals and freshly wounded extirpated pulps alike, when neither was indicated. When we desire a line of demarcation in a cold abscess,—and the curing, like bacon, is made of the decalcified residuum in white or yellow in dental caries, when we wish to fill over and destroy or restrain the germs therein—then full strength is required. But as a germ restrainer or killer  $\frac{1}{30}$  solution will be sufficient either as a disinfectant or antiseptic. Peroxide of hydrogen is a wonderful effervescent agent when it comes in contact with pus, blood, or saliva. In cleansing or freeing abscesses, or putrescent pulp canals from foul gases and all pus, it is valuable. But the loss of the extra equivalent of oxygen by heat, light, etc., sometimes causes unsatisfactory results, though a good article gives us

success. Iodine in tincture is not only a germicide, but it is the most powerful and successful resolvent stimulant known. It promotes the process of resorption of the waste tissue and facilitates the leucocytes scavengers in the blood to seize and destroy any germs or broken down pabulum that can not be formed into protoplasm, and it is eliminated through the kidneys or other excretory glands. It promotes a flow of organizable lymph for tissue. Hence, its indication in all debilitated, sluggish or specific troubles, where healing does not proceed, and the strength required is suggested by the prognosis. In full strength or a syrup of the metal is a powerful escharotic, while a tincture and even in solution the resolvent stimulating qualities are valuable. Sulphuric acid is a valuable agent in the mouth. If we use it in full strength, it is an escharotic and powerful germicide. In scaling and polishing teeth I use a solution after scaling and before polishing, to cleanse all the carious ends of enamel rods when the teeth are attacked with green stain—a form of caries, and if decalcification takes place, sulphate of lime is left which the green stain decay will not attack soon. In children's teeth where the secretions of mucus are vitiated, caries, white, a valuable daily wash is made  $\frac{1}{100}$  solution aromatic sulphuric acid, preparatory to further operations, in removing carious debris, and correcting the mucous glands.

Iodoform is an excellent dressing for putrescent canals, if not the best, when sealed and changed daily. Benzoic acid I use in the form of borated cotton for packing and other dressings. Sanitas, eucalyptus, and other antiseptic agents are mild and pleasant germicides. We must admit that with many individuals some remedies have but feeble sanative effects.

For two years I have been a student and an investigator into the practice of antisepsis, and with the aid of standard works like Wythe's Surgery, Pilcher, and Morris edition of 1887, I feel well fortified for any emergency. I have in my possession two photos of a little girl four years old, living at Kennard, near our place, and its mother having been taken violently insane, with three strokes of a hatchet, crushed its skull to the depth of one and one-half inches, making a ghastly wound. The affair was published in all the papers of the killing of the child, as life was apparently extinct. Dr. O. E. Halloway, of our place, who is an enthusiastic advocate of antisepsis, was called soon, removed the

broken bones and nearly a tea-cup full of brains, and then used nothing but the  $\frac{1}{2000}$  bichloride solution on borated cotton dressings. After eight weeks' treatment the child is now running about, well as usual, save slight paralysis and a severe scar. This is the most wonderful case I have known in our neighborhood, and all to the credit of antiseptis.

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## PROCEEDINGS OF SOCIETIES.

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### MISSOURI STATE DENTAL ASSOCIATION.

KANSAS CITY, MO., JUNE 21—24, 1887,

The twenty-third annual meeting of this society was held in Wetherell's Hall, Kansas City, June 21, 22, 23 and 24. Dr. Wm. Conrad, presiding.

In his annual address the president gave a very able review of the advancement and present condition of the profession. He also enumerated some of the wants of to-day, including higher education, painless dentistry—the real, with no bogus,—a more fraternal feeling, and a correct understanding of the fundamental principles of the profession. He congratulated the society for having among its members so many bright and shining lights, but regretting that their extreme modesty had prevented them from taking the decided and aggressive position before the world at large which they deserved. He called the attention of the society to the fact that in the publication of its proceedings in book form, much benefit would be derived. There would be greater exertions put forth to prepare good papers, more care and skill exercised in clinical work, and he stated that he believed the success of the Illinois State Dental Society to be due to the publication of its transactions, in book form, separate and distinct from journals, etc.

He foresaw the time when a complete medical education will be the foundation on which the future dentist must build his hope and standing, this being evident from the interest manifested in the International Medical Congress, and other signs of the times. He hoped, that in selecting students, the practitioner would

countenance only such candidates as are willing to thoroughly prepare themselves for their chosen profession and that mutual interest in each other's welfare would increase among the members of the Missouri State Dental Association.

Dr. Patterson of Kansas City read a paper on "The Cervical Wall," in which he said the average dentist finds a no more perplexing question, than that presented by the failure of fillings at the cervical margin, for the durability of approximal fillings depends upon the integrity of this border. He reviewed and cited expressions of prominent practitioners in regard to their theories as to the failures from the mallet, undue force and consequent fracture of enamel, the imbibition of the oral fluids and subsequent fermentation establishing caries. The separation after filling being also productive of decay by not being self-cleaning.

The essayist believes the worst enemy to fillings having a cervical border, is the non-adaptation of the gold at that point, hence operators, who use cohesive gold and the mallet, finding their fillings failing, have recourse to tin on account of its therapeutic effect. The success attending the use of this material he thought due to its almost plasticity and more perfect adaptation even to roughly prepared cervical walls. The vaunted "Molecular change" and "Interchange of particles" under existing circumstances was designated an unchangeable humbug. The use of plastics in any part of the mouth was condemned. Non-cohesive gold, proper adaptation to the margin, and perfect finish is the guide to success. For polishing cervical margins he uses a fine wood polishing point with slit in which is inserted a strip of polishing tape wrapped with rough side out. A small piece of tightly rolled cotton used to prevent the instrument touching the tooth structure should be used after the insertion of the first pieces of gold.

Dr. Morrison, said that soft gold was much better at the cervical wall. Too deep retaining pits were a source of many failures. The finishing of fillings at this point is of the utmost importance.

Dr. A. J. Prosser, St. Louis, followed with a paper on "Practical Points on Approximal Fillings," pointing out the necessity of contour, for beauty, utility and comfort. He separates teeth



for approximal fillings by the use of gutta-percha. Discussion of both papers followed.

Dr. Pierce said he never separated by pressure but used a thin saw, following with polishing strips; he never used a drill at cervical wall but always prepares with excavators.

Dr. Sheppard uses a ribbon file matrix, with wooden wedge to conform to tooth and prefers it on account of the smooth finished surface it leaves.

Dr. McMillen believes in the use of non-cohesive or soft gold by reason of its non-electrical powers and easy finish. By soft gold he means gold that can not be made to adhere, no matter how much it may be annealed and driven together.

Dr. Newby emphasized a few points made by previous speakers.

Dr. Bowman thinks the electric mallet more kind to these walls than any other force. He said, everything in its proper place, don't assign all the trouble to one cause. Use gold if it can be used, if not, something else is necessary.

Dr. Carroll, Meadville, Pa., enumerated the points essential in any operation no matter what material employed. He believed in other than the causes mentioned as producing failures. The breaking down of the tooth structure was often due to chemical action induced by electrical influence, and in support of his theory stated that all the elements essential to electrical action were present at this border, viz.: positive and negative elements with an acid reaction of the fluids. The necessity of a fair knowledge of chemistry and the character of the oral fluids, by the dentist, was emphasized. He used the terms electrical and non-electrical gold foil as synonymous with cohesive and non-cohesive foil, and arrived at a belief in this electrical theory of disintegration from the result of long conducted experiments in the realm of metallurgy. Subject passed.

Dr. Conrad gave a practical case of immediate root filling, and at the close of the convention the patient had experienced no inconvenience.

Dr. McMillen, Alton, Ill., read a paper on "Dental Colleges," advocating a higher standard, a longer tutelage—at least two years under a private teacher before being allowed to enter a dental college, the necessity of a thorough English education and a systematic personal training. He urged the raising of the

standard of requirements by concerted action. The *higher*, the better.

Thursday morning was devoted to clinics. Dr. Stevens of Hannibal gave a practical illustration of immediate root filling with wooden points coated with chloro-percha which provoked much discussion.

Dr. J. B. Newby gave a clinic on Gold Crown Work, forming the crown by swaging number 28 pure gold with zinc and lead dies, shaping the band by means of a graduated steel mandrel and a draw plate.

Dr. Shriver of Iowa, Clinic Bridge Work.

Dr. Prosser, St. Louis, Bonwill Mechanical Mallet.

The clinic that evoked the most interest was by Dr. Carroll of Meadville, Pa., on Aluminum Cast Dentures.

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### INDIANA STATE DENTAL ASSOCIATION.

*(Continued from Page 503.)*

The morning of the third day was devoted to clinics; the following gentlemen operating: Dr. J. G. Reid of Chicago demonstrated the "Herbst method," using the Motor manufactured by the Detroit Motor Co. Dr. A. W. Harlan repeated his clinics on the treatment of Pyorrhea Alveolaris; Dr. Ottofy of Chicago implanted a right upper second bicuspid; Dr. Garrett Newkirk of Chicago demonstrated the filling of tortuous root canals with chloro-percha. Dr. Carroll of Meadville, Pa., gave a clinic on making aluminum base plates.

The afternoon session was occupied with the reading of papers by J. N. Hurty on "Alcohol Molecules;" Dr. A. J. Smith, "The First Permanent Molar;" Dr. Overholser, "Practical Miscellany." (Dr. Smith's paper will be published in full in the September number.)

One of the interesting subjects brought up at this meeting of the Indiana State Dental Association, was the Mabbitt mystery. The disappearance of Luella Mabbitt was surrounded with a great deal of mystery, and finally a body was recovered from one of the rivers in the vicinity of her disappearance. It was claimed that she was murdered by her lover and the skeleton found was presumed to be that of the missing girl. An inquest was held

and the verdict of the jury, based entirely on circumstantial evidence, claimed the skeleton to be that of a woman who was supposed to have been foully dealt with, and, according to the verdict of the jury, the woman was about twenty-five years of age. Dr. Pattison, of La Fayette, brought the skull to this meeting, where it was carefully examined by a number of dentists, who, not knowing the history of the case or circumstances, filled out and signed blank certificates giving their opinion as to the probable age of the person whose skeleton it was. The appearance of the teeth indicated that the subject was a male over forty years of age. None of those who signed certificates claimed it to be less than forty, some placed it to be as high as eighty. An impression of the mouth of a twin sister of the missing girl was exhibited and there was not the slightest resemblance between the two sets of teeth. Dr. Pattison has secured the certificates of a large number of dentists who almost invariably agree that the subject was a male over forty years of age. At this meeting he secured twenty-one opinions, and the average of the minimum age, according to the certificates, would be forty-eight and one-half years, and the average of the maximum age, fifty-five years. Seventeen claimed the body to be that of a male, one, that of a female, and three did not state what the sex might be. The evident error into which the jury, as well as the physicians in this case had fallen, would justify the belief, that, in cases of this nature, dentists, who are familiar with the appearance of the teeth in the sexes and at the various ages, should be called in to give their decision before the verdict is rendered. In this particular instance the conclusion arrived at was exceedingly ludicrous — especially so from the fact that the family of Luella Mabbitt sorrowfully cared for and buried the remains of perhaps some old, drunken tramp.

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#### ILLINOIS STATE DENTAL SOCIETY.

TWENTY-THIRD ANNUAL MEETING, JACKSONVILLE, ILL., MAY 1887.

(Continued from page 502.)

Dr. Truman W. Brophy of Chicago, read a paper on Diagnosis of Oral Tumors. He said: "The noun tumor is derived from the Latin verb *tumeo*, to swell, to become tumid or inflated. A

tumor, therefore, in the broadest sense, is a swelling or puffing up of the tissues and may manifest itself in various forms, as a phantom-tumor, an hypertrophy of muscular tissue or an abscess.

"In its more restricted sense, however, and in accordance with surgical usage, a tumor is a swelling caused by some form of new growth. It is impossible to make use of a definition limited to a single sentence or paragraph which shall clearly explain the pathology and phenomena of tumors. If definitions of scientific terms, as found in our dictionaries, were accepted by us as adequate to our wants, our libraries would be meagre indeed."

The late Wm. H. Van Baren defines a tumor as "a local limited enlargement, taking place at any part of the body, and consisting in its substance of a new outgrowth of tissue which has no physiological purpose in its growth." Here we have a tumor very satisfactorily defined in a few words. A tumor is said to be a "purposeless neoplasm," but a tumor is not necessarily a neoplasm. The literal meaning of the term tumor is not accepted by surgeons, as I have previously stated. We can not place abscesses, phantom tumors, hernias, and kindred enlargements among the list of tumors, *i. e.* if we accept the statement that a tumor is a new growth of tissue without physiological purpose. An abscess is a circumscribed cavity containing pus, which pus is dependent upon a preceding inflammatory process.

To enter into a discussion of the pathology of tumors is not the object of this paper. It is sufficient to say that our knowledge of the true character of tumors has been acquired by means of the microscope, and a knowledge of minute anatomy is indispensable to the student of pathology that he may be able to detect the changes which take place in the tissues as a result of perverted nutrition.

Tumors may be studied from different standpoints and under two heads, viz.: histological and clinical. Their etiology, to a great extent, is still wrapped in obscurity. To say that a tumor has its origin from a proliferation of cells is but a feeble effort to explain a condition not well understood. Cohnheim has advanced an ingenious theory, holding to the belief that true tumors can not originate otherwise than in an anomalous excess of cells in the embryo.

Cohnheim says: "There may be produced in an early stage



of embryonal development more cells than are necessary for the construction of a certain part, so that a certain number of cells remain superfluous. Their number may be small but they possess great proliferating power on account of their embryonal nature."

According to this author these supernumerary embryonic cells are the origin of all subsequent growths in the form of tumors any time during life. The great number of congenital tumors met with, such as vascular, dermoid and dentigerous cysts would seem to verify this assertion, but the views of Cohnheim are not generally subscribed to. A distinguished American surgeon has said: "The truth flows naturally from well observed facts, and it is wiser not to be too anxious to reason out theories, if we make ourselves sure of the facts. Theories will take care of themselves."

The clinical history of tumors enables the surgeon of experience to correctly diagnose them in nearly all cases. The microscope should be employed, however, to settle the character of the growths.

For surgical consideration, tumors are divided into two great classes,—benign and malignant. A benign tumor is an innocent growth, is of local origin, and when removed is not likely to recur. Its structure is homologous, *i. e.* consisting in its substance of tissue not unlike the tissue in which it develops. A local disease, its treatment should be local.

Malignant tumors tend towards a speedy destruction of life. They seem to depend to a certain extent upon some constitutional taint or hereditary predisposition. Their structure has not a counterpart among the normal tissues in which they are situated. They are heterologous. They invade the adjacent tissues and impair the general health. Malignant tumors have a tendency to develop in various parts of the body and recur after removal. They not infrequently recur in tissues quite remote from those from which they have been removed. They originate not infrequently from cicatrices, warts and moles and other anatomical imperfections.

The clinical history of malignant tumors carries with it the saddest experience of the surgeon's life. To be called upon to diagnose an oral epithelioma after the cervical lymphatic glands have become involved, and other evidence of a fatal issue is before us—especially in the case of a man apparently otherwise

healthy, of middle age and possessed of a fine physique, is beyond question the most unpleasant task the surgeon has to perform. The oral cavity is subject to tumors varying in number with the tissues of which it is formed. America's most distinguished oral surgeon, Prof. James E. Garretson, whose lectures and clinics I had the good fortune to attend when a student at Philadelphia, indelibly impressed upon me the importance of method in making a diagnosis, and the course to be pursued that of exclusion. *i. e.*, taking up the various conditions which may lead to the formation of a tumor, and step by step, by both subjective and objective signs, and by manipulation, determine the character of the growth.

A patient presents himself for treatment, having a tumor over the anterior surface of the superior maxilla. A marked prominence is observed to the extent of a deformity. What is the cause of this abnormality? What is its character? It may be active pericementitis, an alveolar abscess, an odontocoele, an angioma, a dental exostosis, an osteoma, a fibroma, a distension of the walls of the antrum in consequence of an accumulation of fluid in that cavity. It may be a cancerous growth, or any other form of oral tumor.

To proceed methodically in making a diagnosis we must consider with great care the exciting and predisposing causes of the affection, and keep in mind the anatomy of the parts.

The superior maxillæ form a large part of the face, their anatomical points of interest being the alveolar processes, the malar processes, canine fossæ, the tuberosities, the nasal walls, the great maxillary sinuses, and the palatal plates. What is the character of the tumor over the anterior portion of the superior maxillæ? Is the enlargement due to active pericementitis? The teeth are sound, they are not sensitive to pressure. A tooth does not seem longer than its fellows when the jaws are closed, nor is occlusion painful. The enlargement is not due to active pericementitis. Is it an alveolar abscess from which pus has burrowed through the anterior alveolar plate and filled the canine fossa? The arch contains its full complement of teeth, all in a healthy condition. Fluctuation is not observed. The exploring needle does not evacuate pus. The swelling is not caused by an alveolar abscess. Is it an odontocoele? An odontocoele, as its name implies, requires an unerupted tooth for its nucleus. As before remarked, the

denture is unbroken. We must remember, however, that an odontocoele may have for its origin a supernumerary tooth. On introducing a sharp probe or an exploring needle we do not observe the characteristic ring of the enamel which follows the stroke of the steel. A tooth is not in the growth; it is not an odontocoele. Have we before us an angioma? An incision causes only ordinary hemorrhage, while a vascular tumor bleeds profusely where the walls of its vessels are divided. It is not, then, an angioma. Is it a dental exostosis or an osteoma? The sharp probe enters into its substance with little resistance; it is not an osseous growth.

Since fibrous tumors seek a region for development in proximity with bones possessing much cancellated structure, and appear more frequently upon the maxillary bones than elsewhere, we may have in this case a fibroma. An oral fibroma has its origin from the periosteum, and is due to a morbid condition of the fibers of that membrane. It may emanate from the peridental membrane which has been in a state of irritation of dental origin. Not infrequently have I met cases of fibrous tumors of the jaws and operated for their removal, the initial lesion of which could be easily traced to a pericementitis. A fibroma may grow to enormous proportions, and by pressure on the osseous tissue cause its absorption. A fibroma may become indurated and in some instances it has the feeling of bone. Moreover, the sharp probe enters it with difficulty since the mass is tough and apparently cartilaginous in structure. We have not here a fibroma nor an epulic tumor which has many characteristics of the former. Is this swelling due to a bulging of the walls of the antrum in consequence of an antral abscess? What are the symptoms of abscess of the antrum? We have dull, steady pain, a sense of fullness on the affected side, and in a very large majority of cases a diseased pulpless tooth as the origin of the lesion. When the natural opening between the nasal cavity and the antrum is closed the osseous walls may become thin by absorption and bulge out to a great extent. When the natural opening is not closed the fluid escapes readily into the nose, especially when the patient lies on the well side the fluid escapes profusely into the nasal cavity. Fluid has not found its way through the ante-

rior wall of the antrum to cause the bulging. The antrum is not diseased.

We might in this manner consider all explainable tumors, hypertrophies, puffings, etc., and exclude them all. What, then, shall our diagnosis be? The origin of this growth which has occupied so much of our attention is not found. We can not account for the presence of the tumor. A growth which can not be proved not to be a cancer should be denominated a cancer, and treated as such. Are there any symptoms besides those mentioned by which we may fix our diagnosis beyond question?

There is a proliferation of epithelial cells in an epithelial cancer, and later the cells break down producing an ulcerated surface. The odor from this condition is pathognomonic of the disease. This odor can not be described, but when once familiar with it, it can not be mistaken for any other. The treatment is a prompt and thorough removal of the tumor by surgical operation.

In the discussion Dr. Black said: There is perhaps no more difficult subject to talk about or to write about than the subject of diagnosis. It is exceedingly difficult for one man to tell another how to diagnose a particular disease. We would have more or less difficulty in differentiating scarlet fever from measles by anything that may be said on paper or in words. The student, knowing nothing of these two diseases by having seen them, and having no knowledge of his own, would have difficulty in discriminating the one from another from anything that may be said in words, yet, perhaps, would have very little difficulty after some observation. Observation is the principal mode of learning diagnosis and it can be done better, quicker and more perfectly by observation than any amount of reading. The course followed by the paper is excellent, the method of diagnosis by exclusion, and should be followed I think by every one. But the subjects connected with this matter of diagnosis by exclusion are wonderful, and I might give you one little illustration of the difficulties of exclusion, that may serve to illustrate it. Two or three years ago, sitting in a surgeon's office, he said to me, "here is a little sore that has given me a great deal of trouble," and he went on to say that he had excluded everything and the sore persisted. He said he had used specific remedies, he had used this and that, but the sore persisted and he hardly knew what to



do about it, he did not think it was cancer, it certainly was not specific, because he had spent two months with specific remedies without any benefit whatever. I looked into the patient's mouth and I found an ulcerated spot on the buccal mucus membrane as large as a dime, a pretty deep ulcer. I passed my finger back along the line of the teeth and discovered that the wisdom tooth was protruding right against the cheek with a pretty sharp cusp. I asked the surgeon to look into the mouth as it was closing and he readily saw that the wisdom tooth stuck right into that ulcer. In all his exclusion he had not excluded that factor. That was excluded immediately and that was the last of the case. So in this process of exclusion the best of us will have to exercise a great deal of care, and often will be required to examine and re-examine in order to find all the points in the case. While I am on that subject of sharp corners of the teeth, I will say that it is a very important feature of this subject of oral tumors. The irritation of the sharp corners of the teeth is often the prime factor in the development of epithelioma. Let me say that these epithelial tumors occurring about the mouth and lips outnumber cancers occurring in all other parts of the body combined. They are more prevalent in and about the mouth than anywhere else in the body, you may include uterine cancer, cancer of the stomach, of the intestines and all other parts of the body, hence it is an exceedingly important subject. A case occurred some years ago, and I have had it under my observation more or less ever since. A patient came to me and said so-and-so had diagnosed epithelial cancer of the tongue. I found a condition which was rather frightful with this idea of epithelial cancer in view. One-fourth of one side of the tongue was in a state of induration with an ulceration as large as a quarter, and the condition of the sore presented very much the appearance of epithelioma, but on looking into his mouth I found a sharp corner of the tooth was continually jaggging into that sore, a thing that had not been noticed by the patient, and had not been noticed by those who had examined him previously. That tooth did not stay there long. I did not depend upon cutting it down or smoothing it off or anything else. I told him there was some hope yet. That sore was a long time getting well, but it did get well without any other treatment. And so in excluding these things, while that sore

may have proved or any other similar case may prove to be epithelioma, we want to be sure to exclude all these factors, and probably some of these factors excluded early enough in the way of treatment may save some cases of epithelioma from development.

I may allude to another instance where I was asked to examine a tumor in which one-half section of the lower jaw had been sawed out, and found a very nice case of alveolar abscess. Exclusion had not been carried sufficiently far and quite an injury had been wrought that was unnecessary. But let me say this in regard to cancer, it will require a good many such injuries to obliterate the evil done by delaying too long an operation for a true epithelioma. We had better make a good many mistakes and cut a good many times where it is not necessary, than to allow one case of epithelioma to pass too far before we operate. As has been said in the paper when we have done our best at exclusion and can find that there is nothing else,—that the case presents an epithelioma—we had better operate, though sometimes we will find afterwards that that operation was unnecessary.

#### FIFTH ANNUAL MEETING OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

Monday, August 1st, 1887.

J. Taft, President, in the chair. The roll call showed that the following States were represented: Illinois, Geo. H. Cushing; Ohio, H. A. Smith, J. Taft, C. R. Butler; Indiana, S. T. Kirk; New Jersey, Fred A. Levy; Maryland, E. P. Keech, T. S. Waters, Kentucky, A. W. Smith; Massachusetts, L. D. Shepard; Alabama, C. P. Robinson (visitor).

Dr. Robinson was invited to participate in the discussions.

Dr. J. B. Willmott, of Toronto, Canada, was extended the privileges of the floor.

Representatives of the States were called upon to report the condition of the workings of the various laws. Dr. Cushing reported that two candidates for license had been examined during the year. Dr. H. A. Smith, of Ohio, stated that five candidates had been examined at their last meeting, three of whom passed. Dr. S. T. Kirk, of Indiana, said the law in his State had been

amended so as to include registration. Three-fifths of the dentists in the State are already registered. Dr. Keech, of Maryland, said five applicants for license on examination presented themselves at their last meeting; four passed. Dr. A. W. Smith, Kentucky, said the law had been amended to provide for registration, and many of the dentists had already registered. Dr. L. D. Shepard, Massachusetts, being called for, said his State had finally succeeded in securing a dental law. He explained that the law provided that all persons desiring to practice in the State must take an examination, regardless of the possession of a diploma. Dr. J. B. Willmott, Toronto, said they did not recognize the diplomas of any school, located in Ontario or elsewhere. Dr. Fred A. Levy said the board of New Jersey had almost ceased to examine candidates. The law requiring the presentation of a diploma from a reputable dental college was strictly adhered to. Drs. Cushing, Shepard and Keech discussed the methods of registration, including a definition of the term dentist. Dr. Keech said the examining board of Maryland required practical tests of the fitness of candidates to practice dentistry. Members of the association explained the method of conducting examinations; all of them agreed that licenses should only be issued after such practical tests as would prove the capacity of the applicants.

“Are the diplomas of all dental colleges recognized by the boards of examiners in the respective States?”

Dr. Cushing said they were not. Dr. Kirk said the aim of the Indiana board had always been to close the doors of entrance to the profession through examinations, preferring to send applicants to dental colleges. He then read extracts from the official records of the Indiana State Board of Dental Examiners in reference to the refusal of the board to recognize the diploma of the Louisville College of Dentistry.

Dr. A. Wilkes Smith stated that after the opening of the college term he was compelled to seek rest on account of ill health, and men were admitted by the secretary of the medical faculty to the senior class without his knowledge, and that accounted for the case before the Indiana board (see page 566).

Dr. W. C. Barrett was invited to address the association. He said that it was well-known that the degree of D.D.S. had been

dragged in the mire by the action of certain colleges in the graduation of foreign students, who knew little or nothing of the English language. This was simply disgraceful, and he hoped the association would continue in the future as in the past to uphold the cause of dental education, and raise the standard still higher. It was the business of college authorities to require the presentation of credentials in due form, and if they did not require them, no student should receive a diploma. The recent action of the American Medical Association was a step in the right direction, and might be a lever for powerful results.

A committee of three was appointed to consider the case of the Louisville College of Dentistry, and the action of the Indiana Board of Dental Examiners, composed of L. D. Shepard, E. P. Keech, and H. A. Smith. Adjourned to 8 P. M.

Dr. J. B. Willmott, of Toronto, Canada, came before the association to inquire the reason of the non-recognition of the diploma of the Royal College of Dental Surgeons of Ontario. He read extracts from the catalogue of the college to show that the curriculum was equal to that of the best colleges in the United States. He denied that the College was disreputable because of the shortness of the term, claiming that as many lectures were delivered during that period in his college as were delivered in the five or six months' schools in the States. He stated that the graduates of their school attended two full regular courses of lectures, including an indenture of two years and a half in the office of a licensed dentist, and the highest preliminary examination exacted by any school in America.

The subject was referred to a committee composed of Drs. L. D. Shepard, E. P. Keech, and H. A. Smith.

Dr. Kirk read extracts from the proceedings of the Indiana State Board of Dental Examiners with reference to the dental department of the University of Tennessee.

Adjourned to 3 P. M. Tuesday.

Tuesday, August 2, 1887, 3 P. M.

Dr. L. D. Shepard chairman of the committee to whom was referred the matter of rescinding the resolution of the association in reference to the Royal College of Dental Surgeons of Ontario, reported as follows:

The committee to whom was referred the application of the



Royal College of Dental Surgeons of Ontario, to have rescinded the action taken by this association at Minneapolis, which decided that their L.D.S. should not be accepted as equivalent to a dental degree to save examination by the boards of examiners, respectfully reports, that the action hitherto taken by this association should stand for the following reasons :

1st. That the L.D.S. granted in Ontario is a local license to practice, not recognized in all the provinces in the Dominion nor in Great Britain, rather than a degree in dentistry conferred on the completion of a college education. In this respect it is analogous to the licenses granted by one of our state boards, which are not generally recognized by the boards of other states.

2d. That when the L.D.S. is granted as a degree in dentistry, on the completion of the required course in their school of dentistry, it represents two courses of four months each, while our rules require at least two courses of five months each.

3d. That in their last announcement they advertise to grant the L.D.S. for a fee and after examination, upon any non-resident who has been in practice three years, exclusive of two years pupillage, *sine curriculo*.

L. D. SHEPARD,	} Committee.
E. P. KEECH,	
H. A. SMITH,	

This was unanimously adopted.

Dr. Cushing from a special committee presented the following report :

Your committee to whom was referred the action of the Indiana State Board of Dental Examiners in relation to the rejection of the dental diplomas of the University of the State of Tennessee find that the University of the State of Tennessee have granted, as per its announcements, dental diplomas to those who have attended only one course of lectures, in any institution—which practice is in direct opposition to the resolutions of this association adopted in 1885, in which it was resolved that after the close of the college sessions of 1884-5 the various state boards comprising this association be instructed to “refuse the diplomas of any college which does not require as a prerequisite for graduation, attendance upon two full regular courses of lectures and practical instruction, of not less than five months duration and

held in separate years." The University of Tennessee must have been fully cognizant of this fact, as copies of the transactions of this association were forwarded to them, and the transactions were also published in the dental journals, hence they must have issued diplomas after the date above named, with the certainty that they would not be received by the state boards represented in this body—and can therefore have no ground of complaint against any board for rejecting them. Your committee find that the Indiana State Board of Dental Examiners acted "as in duty bound" and recommend that this association fully endorse their action in this case.

GEO. H. CUSHING, }  
C. R. BUTLER, } Committee.  
E. P. KEECH, }

This was adopted unanimously. On motion it was

*Resolved*: "It is the sense of this association that it is inexpedient to recommend state boards to accept the certificates of license, issued by authorities in other states."

Representatives of the boards present reported the provisions of the various dental laws relating to the issuance of temporary licenses. Several of the State laws do not provide for the granting of temporary licenses.

Adjourned to 4 P. M., Wednesday.

Wednesday, August 3, 4 P. M.

The committee appointed to report on the difference between the Indiana State Board of Dental Examiners and the Louisville College of Dentistry, made the following report:

In a circular issued by the Secretary of the Indiana State Board of Dental Examiners, dated July 5, 1887, notice is given that "the Board has decided against accepting the testimonials from the Dental Department of Hospital College, Louisville, Kentucky." The Indiana board has presented its statement of the case to this association and the Dean of the Dental Department of the Central University of Kentucky (Louisville College of Dentistry) has given a full statement of its side of the case, and has made frank acknowledgment of the mistake made, and has given assurances that hereafter no one shall have cause to complain, and that so far as is in the power of the College, it will rectify this mistake and any others, therefore, *Resolved*,

1st. That the Indiana Board only did its duty in refusing to accept the diploma from said college in this particular case.

2d. It is recommended to all state boards to confer with a college whose diplomas are questioned before publishing it, as direct to the end that no injustice may be done, particularly to those who have honestly earned their diplomas from such an institution. It is possible that such a diploma might be issued without the slightest intention on the part of the college to depart from the standard governing the boards, as is claimed was the case in this instance. Respectfully submitted,

L. D. SHEPARD,	} Committee.
H. A. SMITH,	
E. P. KEECH.	

Adopted.

The Association then proceeded to the election of officers with the following result: President, Geo. H. Cushing; Vice President, T. S. Waters; Secretary and Treasurer, Fred A. Levy. The new president was inducted into office and the Association adjourned to meet at the time and place of meeting of the American Dental Association, Old Point Comfort, Va.

#### INTERNATIONAL MEDICAL CONGRESS.

Present indications point to the fact that there will be a large attendance at the meeting of the Ninth International Medical Congress, to be held at Washington, September 5th to 20th, 1887.

The Baltimore & Ohio Railroad Company have arranged to run special trains, composed of sleepers and coaches for the exclusive accommodation of those attending the Congress, leaving Chicago, Saturday afternoon, September 3, 1887, to be run on Limited Express time, arriving at Washington the next afternoon passing over the Alleghanies in daylight.

On application to T. H. Dearborn, G. N. W. P. A., B. & O. R. R., 83 Clark street, Chicago, sleeping car accommodation will be reserved.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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L. L. DAVIS, D.D.S.

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## IMMEDIATE ROOT FILLING.

Several papers have been published during the past year or two on this subject, some are good, and others not very valuable. The fathers of modern dentistry were in the habit of extirpating the pulp of a tooth and immediately filling the root as soon as the hemorrhage was arrested. Practice during the past twenty years or more, until recently, has been to remove the pulp and stop the root with medicated cotton for a few days or a week or two, and then fill it. This method has also obtained in all cases where there has been a fistulous outlet from the root to the surface of the gum. The filling of roots of pulpless teeth with or without blind or cold abscesses has generally been preceded by a course of treatment, of more or less duration, generally for a period of two weeks or longer, for fear of creating an acute abscess by the sudden closing of the root. Now it is proposed to fill all roots at one sitting without previous treatment. This, in our judgment, is hazardous for several reasons. When a pulpless tooth is opened for the first time, in which the pulp has long been dead, pus may flow from the canal or there may be a watery discharge from it; these conditions point to a departure from the normal state around the roots. In most cases the peridental membrane will be found detached from around the apex of the root, and there may be, coincident with this, a pouch or a sac from whence the pus or exudate proceeds. If the contents are thoroughly drained from the sac and a disinfectant injected into the sac, no one can foretell that there will not be an acute inflammation on the sudden stopping of the root, which may result in an alveo-



lar abscess. It is true that in many cases the alveolar plate may be pierced and drainage may be secured, but not every patient will submit to such surgical treatment. Counter-irritation in a few cases may prove successful, in a few others, constitutional remedies can be administered to prevent pus-formation, but there are many teeth, the roots of which, when filled, are not easily approached with drills and trephines; many others where counter-irritation will prove of no avail and the giving of drugs internally, will not always abort incipient abscesses, because they are administered too late to be of service. Another important point is frequently overlooked by the advocates of immediate root filling, viz., the disinfection of instruments prior to their introduction in root canals, and the too hasty removal of their contents before disinfection, and the choice of ineffective agents to produce this result. Again, septic matter is often forced through the root and allowed to remain, without being rendered aseptic, which is afterwards sealed in the sac or beyond the apex of the root, and trouble may be expected from this source. In some cases the substance used as a root filling is also forced through the apex, if it be ever so bland it may cause trouble by its presence. Should the apex of a root be encysted, there is little, if any, danger from immediate root filling; but in the cases previously spoken of, danger is invited for the operator who neglects any of the precautions to ensure complete disinfection, the avoidance of forcing irritating drugs or other foreign substances through the root or the projection of the root filling beyond the apex. The roots of teeth, having fistulous abscesses, may be filled at once, and in most cases the same practice may be safely followed after the extirpation of the pulp, but in those cases where the canals are not absolutely dry at the time of opening them, it is not as a rule, safe practice to fill such roots without previous treatment, or the establishment of drainage through the alveolar process, by perforation opposite the apices of roots.

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#### THE DENTAL REVIEW AND THE LAKE ERIE DENTAL ASSOCIATION.

As several of our exchanges have published a series of resolutions adopted by the above association reflecting on the editor of *THE DENTAL REVIEW* we deem it a duty to our readers to make the following statement:

We published a query in the January number which appeared to excite the ire of Dr. Cyrus See of Meadville, Pa. In a letter written to us he asked for an apology for the appearance of the query, and the name of the author. We declined both. We offered him space to deny that he was the author of the query, which he declined. The query was perfectly legitimate, innocent, not malicious and in nowise reflected on the gentleman. We have not the pleasure of his acquaintance and indeed had never heard of him until his letter was received. His name does not appear in Taft's index to periodical literature and so far as we know it has not appeared elsewhere. We have no doubt that he is a reputable dentist and a good citizen, but the editor of the DENTAL REVIEW owes him no apology and has done him no injury, and if the Lake Erie Dental Association believes that it has a right to enter into the fancied grievance of one of its members against this journal it has a perfect right to do so. The action of the committee was absurd and foolish, and the association exhibited a lack of common fairness to the editor, in voting upon the resolutions without giving him an opportunity to defend himself. The committee either did not have all the correspondence, or was desirous of giving to the world a specimen of literary asininity not warranted by the facts as disclosed in the correspondence.

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#### THE ABUSE OF DENTAL CHARITY.

A number of letters referring to an editorial on the abuse of dental charity, which appeared in the July number of the REVIEW have been received; and judging from the tone of their contents, there seems to be a general awakening of the profession at large for a reform in this direction. Some of the letters offer suggestions as to how this might be accomplished; one we will quote in particular, because the writer understands where the reformation should begin:

"The College Faculties Association which meets in September next, wields the power to correct such irregularities, and if carried out properly, would in a great degree correct a custom that is daily growing more harmful in more ways than one. I have long thought that this 'abuse' which amounts to an outrage upon the profession should be stopped or handicapped in

some way. The above organization is in a proper working order, and very powerful, as it includes nearly all the colleges in the country."

We trust that this matter will receive the attention it so urgently demands, and that some measure will be speedily adopted, whereby this "abuse" will be restricted to its proper domain, especially in cities "afflicted" with dental colleges.

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#### AMERICAN DENTAL ASSOCIATION.

The twenty-seventh annual meeting of the American Dental Association was held in the Park Theatre, Niagara Falls, Tuesday, Wednesday and Thursday, August 2, 3 and 4, 1887. Eighty-eight members paid their dues and one hundred and thirty-six names were registered in the book provided for that purpose by order of the Association. In the section devoted to Dental Education, Literature and Nomenclature, three papers were read, one by Dr. Louis Ottofy, one by Dr. W. H. Atkinson, and one by Dr. J. N. Crouse. Section three reported one paper by the chairman, Dr. E. T. Darby, and remarks on Regulating Teeth, were made by Drs. W. N. Morrison, S. C. G. Watkins, W. C. Barrett and Geo. W. Keely. Section four presented no report, but a paper was read by Dr. Frank Abbott on Comparative Anatomy. Section five presented a paper on Immediate Root Filling, by the chairman, Dr. A. W. Harlan. Section six made a report through the chairman, Dr. H. A. Smith, and two papers were reported, one of which was read by Dr. C. N. Pierce. Section seven offered a report through the chairman, Dr. T. W. Brophy, and a paper by Dr. W. H. Atkinson, on Sponge Grafting. Section one presented a paper on Mechanical Dentistry. All of the papers were freely discussed by the members present.

We believe that the published transactions will show a volume much in advance of any prepared by the Association for some years. The utmost harmony and good feeling prevailed throughout, there being no parliamentary or log-rolling work done.

The election of officers resulted as follows: President, Frank Abbott, N. Y.; First Vice President, C. R. Butler, Cleveland, O.; Second Vice President, T. S. Waters, Baltimore, Md.; Recording Secretary, Geo. H. Cushing, Chicago; Corresponding

Secretary, Fred. A. Levy, Orange, N. J.; Treasurer, Geo. W. Keely, Oxford, O. Members of the Executive Committee for three years, A. W. Harlan, A. O. Hunt and L. D. Shepard. The next meeting of the Association will be held at Old Point Comfort, Va. The officers of the Association were appointed a committee to confer with the officers of the Southern Dental Association to arrange for a union meeting of the two societies. The sum of \$200 was voted to Dr. W. D. Miller, of Berlin, Germany, for the paper presented to the Association, but not read, at the meeting held in 1883. A resolution was offered to appropriate \$500 to the Dental Section of the International Medical Congress, which was defeated. A resolution was offered by Dr. W. N. Morrison, proposing a prize of \$500 for the production or discovery of a dental cement, to be open for competition to the entire world for a period of five years. It was laid over for a year, and a committee of three was appointed to take the matter under consideration. Drs. A. O. Hunt, Geo. H. Cushing and A. L. Northrop compose the committee. The railroads, hotels and the local committee of arrangements received a vote of thanks and a special vote was taken, thanking Dr. S. A. Freeman, of Buffalo, for his energy and efficiency in catering to the wants of the members.

#### THE WISCONSIN STATE DENTAL SOCIETY.

A very successful meeting was held in Milwaukee, beginning Tuesday, July 19, and continuing for three days. The society is entering on a new era of prosperity; internal dissensions have been healed and every member is beginning to feel that a responsibility rests on him individually for the success of future meetings. Of the papers read, the ones on "Pyorrhœa Alveolaris," by Dr. C. G. Junkerman, of Milwaukee; "The Cell," by Dr. G. H. McCausey; "Bridge and Crown Work," by Dr. R. G. Richter; "Sensitive Dentine," by Dr. H. L. Banzhaf, and "A Little Plain Talk on Ethics," by Dr. C. C. Chittenden, were the most notable. Dr. H. M. Brown gave a lecture on the "Relation of Syphilis to the Oral Cavity," which was attentively listened to. One or two other papers were read, but we had not the pleasure of listening to them during their presentation. The clinics were instructive and entertaining, and were well attended. A new engine mallet



was exhibited, the invention of a Milwaukee dentist. The elder Dr. Southwell presented some split plates for regulating, holding jack-screws *in situ*. The Detroit motor was also on exhibition. Several stamped crowns and numerous other instruments and appliances were shown. We had the pleasure of dining with the Honorable State Board of Dental Examiners, and altogether were well repaid for our journey to the Cream City.

In future issues we will present some of the papers read. The State editor of the *Archives* was on hand, and the readers of that veteran journal will no doubt be regaled with some of the good things said and done by the society. The outlook for the future of the organization, now in the eighteenth year of its existence, is encouraging, and a little good work is only called for from the new president (Dr. W. F. Lewis) and the accomplished and versatile secretary (Dr. W. S. Sullivan) to make of the next meeting a grand success both in point of attendance and in scientific interest.

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#### CAPPING PULPS.

In this issue of the REVIEW we present four papers read before the Chicago Dental Society at the July meeting. We invite contributions from our readers on this subject, and hope that a full and free discussion of the same may be had in the interest of this much-abused organ. Until a definite conclusion is reached concerning treatment and capping of exposed pulps is formulated, the same uncertainty will exist, with reference to the probability of a pulp living under any or all methods now practised.

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#### INTERNATIONAL MEDICAL CONGRESS.

This convocation of medical men will have assembled, done their business and adjourned before the next number of the REVIEW is issued. We hope that all who can make it convenient to attend this world's congress will do so. We are assured that everything possible has been done to make the dental section a grand success. No one of our readers need fear exclusion from the congress, as the doors have been thrown open wide enough to admit all respectable dentists. Clinics will be a feature of the occasion. Are you going?

## THE SOUTHERN DENTAL ASSOCIATION.

Our Southern brethren are all awake to the importance of being present at their next annual meeting at Old Point Comfort, Va. Brother Catching, of the *Southern Dental Journal*, is very enthusiastic about making arrangements to accommodate all who will go to the meeting. A reporter for the REVIEW will be present, and the readers of this journal will get all the good things presented. We urge all of our subscribers to go and join hands with the members of the Southern, to make a pleasant and profitable meeting.

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## HOWARD UNIVERSITY DENTAL DEPARTMENT AND THE AMERICAN COLLEGE OF DENTAL SURGERY.

In late numbers of the REVIEW, editorials have appeared in regard to several dental schools. We are pleased to note that the American College of Dental Surgery, which was so severely criticised for its course of unprofessional advertising, has abandoned that method. They have removed all objectionable advertisements from their windows, and, to all outward appearances, conduct a respectable institution. The REVIEW will continue to notice the future course of the college, and will be pleased to note further improvements.

Reference was made in the May number of the REVIEW to Howard University as being one of the schools which still accepted five years' practice as equivalent to one course of lectures in a dental college. It affords us much pleasure to chronicle the fact that that method has been abandoned, and that the Dental Department of Howard University has fallen into the rank and file of a respectable dental educational institution, requiring two full courses of lectures before the candidate can come up for graduation.

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THE American Medical Editors' Association will give a banquet to foreign medical editors Monday evening September 5, 1887, Washington, D. C.

## DOMESTIC CORRESPONDENCE.

## SULPHUR.

*To the Editor of the Dental Review :*

SIR:—In your issue of June 15th, the following statement, under the head of Memoranda, occurs :

“ At the State meeting, at Jacksonville, the flowers of Sulphur was advocated as a dentifrice on account of being a disinfectant. Sulphur is inert used for such a purpose.” You do not state whether you intend to convey the idea that Sulphur is inert as a dentifrice, or as a disinfectant. Believing, as I do, however, that either statement can and should be taken “ *cum grano salis* ; ” will you accord me the privilege of giving expression to a little experience in your most excellent journal.

While I do not claim originality in the idea of using Sulphur as a dentifrice (for certain purposes), I do believe I was the first to bring the matter to the attention of the Chicago Dental Club, and asked that our confrères give it a trial and report their experience. Several members of the club stated, when the subject was first mentioned, that they had seen something in their readings about the use of Sulphur, and that they had been using it to some extent combined with equal parts of “ *creta prep.* ” They did not speak very favorably of its action, but I am led to believe, from the investigation and study I have given the matter, that a very good reason exists for the conclusions to which they came.

First, the idea was given to me by an aged Irish lady, who called for a full upper and partial lower denture. This lady remained in Ireland until of middle age, and as she is considerably above the average in intellect—in fact is an educated lady,—she is very conversant with many of the aphorisms of the mother country. Among others, she mentioned to me that the following was there, a familiar saying, “ That to light a pipe with a match while the sulphur was still burning, was a panacea for the tooth-ache,” and also that powdered sulphur would remove tartar and cure scurvy. Now, I remember of hearing my father state quite often that almost all the “ old sayings ” of a country had some scientific foundation if you would take the trouble to hunt it up

and trace it out, and so I am led to believe that these two statements are at least based upon scientific principles. The lady mentioned, had the eight inferior anterior teeth, and when she called I found them so imbedded in calculus that I could not get my own consent to take an impression without first removing the deposit and treating the gums. I made but one attempt with a chisel when she found herself too nervous to stand it, and when she found out what I wanted to do she told me to postpone it and she would call again in about two weeks. I was very much surprised when she returned, to find most of the deposit gone (she had been picking at it constantly, she said), and that which remained was quite soft and easily removed. When I asked her how she did it she told me about the Sulphur. For the past six months I have prescribed it in a good many instances, and am now asking my patients to use it occasionally where there is a tendency to this deposit, and while I do not think I have had sufficient time to give a positive opinion, I have been very much pleased so far with results.

Now then, comes the queries, What is it? What does it do? and How does it do it?

As to "What it is?" Any attempt at a definition to your readers might be deemed presumptuous, still it may assist my purpose to mention some of its properties, and just here let me say that the remainder of this paper is simply a statement of facts, culled here and there from our different authorities and for which I claim no originality, I simply bring them to notice. Sulphur is a non-metallic element—spec. grav.—2, Eq. number 16, a bad conductor of heat and becomes negatively electric by friction. Melting point of ordinary Sulphur, in its different allotropic states, 232 to 248 F. Insoluble in water, but soluble in *alkaline* solutions, petroleum, rectified coal naphtha, the fixed oils, volatile oils, alcohol, ether, chloroform, and the bisulphide of carbon. It is stated that one part of tallow heated with 3000 parts of Sulphur imparts to it an intensely red color; and so great is the affinity of Sulphur for foreign animal substance, and so minute is the quantity of that matter capable of producing this change, that Magnus asserts that Sulphur touched by the hand will be colored red by the greasy matter thereby imparted, upon being heated to 572° F. In internal administration it is supposed to be carried into



the circulation by the fatty matters of the alimentary canal which dissolve it. Sulphur forms with oxygen four principal acids, the hydro-sulphurous, sulphurous, hydro-sulphuric and the sulphuric—with hydrogen sulphohydric acid or sulphuretted hydrogen.

Flowers of Sulphur is always contaminated with a little sulphuric acid, which is formed at the expense of the oxygen of the air contained in the subliming chambers; and it is these compounds with oxygen and hydrogen, which, I believe produces the effect. I think I have stated sufficient to conclude, that each and every one of them can be formed in the mouth and this fact, coupled with its negative electric force, will be sufficient to settle the fact that it is not inert. Sulphuric acid dilute is recommended in all calculous affections, attended with phosphatic sediment, also for checking excessive pyalism. As to how it acts. From the foregoing I believe that entering the mouth it is dissolved by the fatty matters of the saliva and mucous membrane that it is in part converted into sulphuric and sulphurous acids. That the sulphuric acid (largely diluted as it is), partially dissolves and disintegrates the calculus, while the sulphurous acid, having a particularly fatal influence on the lower forms of animal and vegetable life, owing to its anti-oxygenizing influence, suffocates the organic beings by denying them the oxygen necessary for existence. This acid acts physiologically as well as chemically, it also prevents fermentation by destroying the microscopic organisms necessary to that process. If this acid possesses these powers of anti-oxygenation, of destroying these microscopic organizations, of preventing fermentation, then is it not disinfectant? And is it inert? Several authorities claim that epidemics of small pox and other infectious diseases have been arrested by sulphurous acid as a disinfectant. Creta prep. I believe is incompatible with sulphur and being an excellent antidote for any of the acids, I hardly think it necessary to say more why they should not be prescribed together.

Should the above be the means of establishing landmarks by which to guide thought and locate any new ideas upon this subject I shall be more than repaid. I ask the co-operation of the profession and would be glad to receive the results of any experience in this direction.

E. L. CLIFFORD, D.D.S.,  
439 W. Madison St., Chicago, Ill.

## FOREIGN CORRESPONDENCE.

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FRANKFURT, Germany, June 13, 1887.*To the Editor of the Dental Review :*

DEAR SIR—I have seized this opportunity to place you in a position that you may properly understand in what estimation the degree of D.D.S. is held in Europe, especially in Germany, since some American dental schools, of so-called good standing, have graduated persons of the lowest moral character, in from five to six months, persons who can hardly speak the German properly, much less speak or write the English language.

A famous dental college of Philadelphia has, within the last few years, graduated a number of persons—four at least—who are located in Frankfurt, Germany; and these men have attended but one course in that college. Three of the parties referred to were barbers, and one was simply a butler.

At the time that these gentlemen attended the college in question, I notified the dean, in a private and confidential letter, of their standing at home. Neither of them had attended any German university, for they lacked sufficient education even to be admitted; nevertheless, after one course in the dental college referred to, these persons returned as graduates and established themselves in the practice of dentistry.

As long as such conditions prevail in the United States, it is not to be wondered that Germans who have attended German universities of four terms (and that means two entire years) who have then received their license to practice as dentists, will not associate with the American D.D.S. And further, it is not surprising, that, on account of the worthless American title, they have endeavored to check the further ingress of American graduates. At present we have reached the point at which no one is allowed to use the title of dentist unless he has been licensed by the German Government. Such titles as dentist, American dentist, doctor, are forbidden by the Imperial Court at Berlin. In order to obtain a license to practice in Germany, it is neces-

sary to attend four terms at some German university, and they can be attended within two years."\*

Very truly yours,      ADOLF PETERMANN.

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## REVIEWS AND ABSTRACTS.

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TRANSACTIONS OF THE CALIFORNIA STATE ODONTOLOGICAL SOCIETY, 1884-5. San Francisco.

This Society, having been but two years in existence, has issued its first efforts in a printed form, and to say that its promising future is flattering would be expressing it mildly. The volume contains 237 pages of reading matter, composed of addresses, essays, discussions and business relating to the early organization of the society. The standard of excellency in the productions presented for consideration is rarely excelled by any society claiming rank as a scientific body. A careful examination of the work forces us to say that the rivalry now existing between two State organizations will certainly be productive of much good in furnishing scientific literature. Keep on fighting brethren, it is entertaining as well as highly instructive; but we insist on showing your hand every year with a volume of transactions. Time is too precious to wait two or three years for one report.

### NEW PUBLICATIONS.

*Medical Classics* is the name of a new monthly journal published in New York. The first issue is dated June 1st. Whether it is the *avant courier* of some mercantile house remains to be seen; at any rate it is neatly gotten up and very readable.

*The Pacific Record of Medicine and Surgery* has completed the first year of its existence, and enters upon the second year with a promise to make the *Record* more valuable than ever. It is an entertaining and valuable journal and we wish it success.

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\* In the April number of the DENTAL REVIEW appeared a letter from one of our German correspondents, wherein this same subject was referred to. From the above communication, it appears that, perhaps, Americans are as much at fault as foreigners. The article from the April number has been published in full in the July number of the *Deutsche Monatss. f. Zahnk.*—ED.)

## DENTAL COLLEGE COMMENCEMENTS.

### THE CENTRAL UNIVERSITY OF KENTUCKY — DEPARTMENT OF DENTISTRY.

The first annual commencement of the Dental Department of the Central University of Kentucky (Louisville College of Dentistry), was held in connection with that of the Medical Department, Hospital College of Medicine, at Masonic Temple, Louisville, Kentucky, on Tuesday, June 14, 1887, at 8 p.m. The valedictory address was delivered by Charles Kelso Runyon, of Indiana, and the address to the graduating class by Prof. Jas. Louis Howe. The degree of D.D.S. was conferred upon the following ten gentlemen by L. H. Blanton, Chancellor:

J. C. Blair, Mississippi.  
J. W. Creed, Kentucky.  
W. W. Griffith, Texas.  
W. P. Moore, Illinois.  
E. T. Morgan, Florida.

C. K. Runyon, Indiana.  
J. C. Steen, Ohio.  
W. W. Steen, Kentucky.  
J. W. Trainor, Indiana.  
J. Van Eldren, Kentucky.

? ? ?

TO THE EDITOR OF THE DENTAL REVIEW.—*Sir*: In answer to I.O.F., July number, I have been quite successful in removing broken broaches by loosely filling the canal with a few fibres of absorbent cotton dipped in a saturated tincture of iodine. Leave it from two to five days, when, usually both can be removed together. Any discoloration (from the iodine) can be removed with aqua ammonia or alcohol.

E. L. CLIFFORD, D.D.S.

Chicago, July 16.

TO THE EDITOR OF THE DENTAL REVIEW.—*Sir*: I have read so much of the various qualities of gold manufactured for the use of dentists and have tried to use a number of different kinds. I have bought what is called soft gold, cohesive gold, non-cohesive and I don't know what other different sorts of gold. I can not say that I observe much difference between certain makes of gold bearing different names, as for instance, I have found what is termed soft gold, non-cohesive gold of one manufacture to be just about one and the same thing. Can some of your readers tell me the difference between soft or non-cohesive gold and what is sometimes called hard or cohesive gold?

N. B.

St. Louis, Mo., July 22, 1887.



MEMORANDA.

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Dr. E. A. Bogue has returned to Paris.

Dr. Dwight Smith, of New York, has gone to Europe

Ozone has been liquefied by K. Olszewski. Its color is dark blue.

Dr. O. Carpenter, of Oakland, California, has returned to the Pacific slope.

Myrtol is that portion of oil of myrtle which boils at 320° to 338° F. It is a disinfectant.

Drs. T. B. Wheeler and J. Rollo Knapp returned on the S. S. Britannic, of the White Star Line.

Immediate root filling is the latest craze. Good judgment is necessary to avoid disastrous results.

The resolutions concerning "Patents" were adopted by the Wisconsin Dental Society at their last meeting.

ERRATUM.—On page 454 of the REVIEW, fourth line from the top, should read "ennobling," instead of "enabling."

One who knows say a physician's work fills six feet of ground, but a dentist's fills an acher.—*Journal of Reconstructives*.

The editor of the REVIEW would not be convinced that one of his associate editors had wandered off on a matrimonial voyage.

A. S. McCandless, D.D.S., of Marshalltown, Iowa, visited Chicago, for the first time since commencement day, 1884-5, last week.

Dr. F. S. Whitslar, of Youngstown, Ohio, spent a couple of weeks in Chicago, in July, visiting professional friends and relatives.

Dr. J. B. Willmott, of Ontario, has promised us a communication for the September number of the REVIEW, on "Dental Education in that Province."

Dr. Edgar D. Swain has devised a pair of pliers for turning the rim of a metal plate. They may be obtained from L. J. Mason & Co., Chicago, on order.

Dr. W. F. Litch, the editor of the "American System of Dentistry," is recreating on foreign shores. The third volume of this work will be issued early in September.

Eighty parts iodoform, fifteen parts oil of cinnamon, and five parts finely powdered ground coffee, packed into a foul root, will disinfect it, and also prove a very agreeable dressing.

TOOTHPICKS.—Charles Foster, a Maine man, and the pioneer in his business, makes 18,000,000 of wooden toothpicks annually, employing patented machinery which it has cost \$50,000 to protect from infringement. Needless to say that he is already rich.

Wisconsin, Iowa, Illinois, Indiana, Kentucky, Missouri, Michigan, Canada, Pennsylvania, New York, Maryland, Louisiana, Alabama, New Jersey, Connecticut, Massachusetts, Ohio, Delaware and other states were represented at the meeting of the American Dental Association.

Dr. W. N. Morrison recommended that a prize be offered for the production of a plastic filling for teeth, which should resist wear and the solvent power of acids, alkalies, and ferments. We will give a year's subscription to the REVIEW for a two-page article, giving formulæ on this subject.

Dr. W. Mitchell, of London, England, has sent us a pair of right and left mallet pluggers. They are very useful in reaching the palatal and lingual surfaces of teeth, and also for packing gold in the crowns of third molars. The Dental Mfg. Co. of London have them on sale, we believe.

The latest developments in the "Mabbitt Mystery," is the production in Court of the complete genital organs of a female and the evidence of the coroner and three doctors that the body found was that of a female. What further evidence may be produced to convict the young girl's lover is yet to be discovered.

*The Southern Dental Journal* for June has, as a frontispiece, a portrait of Dr. W. W. H. Thackston, of Farmville, Virginia, the present president of the Southern Dental Association. We hope many of our readers will have the pleasure of greeting him at Old Point Comfort, the 30th of August, when the association will convene.

An ethereal solution of tannin of the consistency of thick cream, is recommended in the treatment of burns and scalds. The evaporation of the ether leaves a pliable, non-elastic coating superior to collodion. It does not wear away with gentle friction, for some days, and very quickly relieves the intense pain of a fresh burn or scald. Try it.

We are establishing a course of correspondence all over the world, and recent letters received indicate, that within a reasonable length of time, we shall be in continuous correspondence with prominent dentists everywhere. In a letter just received from Guayaquil, Ecuador, we learn of the favorable progress dentistry is making in South America.

A new college has been organized in St. Louis, the Hygienic College of Physicians and Surgeons. By its first announcement, we notice that J. F. Sanborn, M.D., D.D.S., of Tabor, Iowa, has been elected to fill the chair of Physiology, Histology, and Chemistry; and Henry S. Chase, M.D., D.D.S., of St. Louis, Mo., to fill the chair of Dental Surgery.

The National Association of Dental Examiners was not very largely attended this year, this being due, we believe, to the fact of there being three great meetings coming so closely together. This association should be more generally attended, as it is responsible for the entrance into dental practice, of nearly every practitioner in the United States. Come out, gentlemen, and do your duty.

At the last meeting of the Wisconsin State Dental Society, a committee for the formation of local societies was appointed as follows: Drs. J. S. Reynolds, Monroe; Charles C. Southwell, Milwaukee; and W. L. Conkey, Appleton. This is a step in the right direction, and we hope other states will follow in regular order until local societies are established in all states outside of the large cities.

Officers of the Wisconsin State Dental Society : President, Dr. W. F. Lewis, Milwaukee ; First Vice-President, Dr. C. C. Southwell, Milwaukee ; Second Vice-President, Dr. F. L. Dolbeare, Oshkosh ; Secretary, W. S. Sullivan, Madison ; Treasurer, B. Douglass, Appleton. Milwaukee was selected for next place of meeting.

W. S. SULLIVAN, Sec.

Chromic acid formerly contained some sulphuric acid, but as now prepared by Merck, it is absolutely free from it. It deliquesces very slowly, and hence may be used about the mouth without danger of injuring the soft tissues. It is a favorite escharotic in our hands, on account of the limitation of its action. A fungous pulp or granulated gums, or small morbid growths within the mouth, are best treated with chromic acid.

Another reason why teeth should be preserved in their natural appearance may be gleaned from the following: "A young man with prominent gold filling in his teeth is wanted in Chicago by the Cottage Grove avenue and Twenty-second street police. His scheme is to advertise through employment bureaus for a young lady copyist to whom he promises unusually good wages. Each applicant is accepted but required to furnish \$10 "to pay for a license."

A man calling himself W. T. Baker has appeared in several Illinois towns, selling a liniment and extracting teeth on the street corners and in public squares. He is accompanied by a woman who claims to be a gypsy. When he appeared in Mattoon, Drs. Lumpkin and Campbell compelled him to cease operations in their city, by threatening to prosecute him. Look out for him and pass him over the border, or have him arrested for violating the State dental law.

#### RESIGNATION OF DR. BOGUE.

NEW YORK, July 18th, 1887.—*Mr. Editor*—Will you please give notice that, as I am unable to continue the work of the Secretaryship of the Dental and Oral Section of the International Medical Congress, Dr. A. M. Dudley, of Salem, Mass., has kindly consented to act. All communications should henceforward be addressed to him. Respectfully yours, E. A. BOGUE, 29 East 20th st.

#### CENTRAL ILLINOIS DENTAL SOCIETY.

PEORIA, ILL., July 18, 1887.—*To the Editor of THE DENTAL REVIEW : Sir*—Will you please announce that the sixth annual meeting of the Central Illinois Dental Society will be held at Springfield, October 11th and 12th, 1887. An interesting session is assured, and all are invited. W. A. JOHNSTON, Sec'y,  
430 Main st., Peoria.

One of the objects for favoring an early introduction of cremation, as a method of disposing of the dead, is for the purpose of recovering the tons and tons of precious metals with which the human mouths all over the world are being filled. Some day, in the future, a columbarium might command untold value. There may be persons engaged in the business of extracting gold and silver from the various urns, and again replacing the human ashes to rest for centuries to come.

The Illinois State Board of Health has given notice that, after the close of the sessions of medical schools of 1890-91, it will not recognize diplomas unless based upon four years of study, and attendance upon three full courses of lectures before

graduation. All diplomas presented for registration, issued by medical colleges in good standing and dated prior to above date, will be recognized as usual. It is only by such actions as this, by registration authorities, that the cause of medical education will be uplifted.

#### WESTERN ILLINOIS DENTAL SOCIETY.

MACOMB, ILL., July, 1887.—*To the Editor of THE DENTAL REVIEW: Dear Sir*—The second annual meeting of the Western District Dental Society of Illinois, will meet at Macomb, Ill., the third Tuesday and Wednesday of October. All dentists are invited to attend. Those dentists living in this district are urged to attend and help make this meeting second to none in interest.

R. W. BAILEY, D.D.S., Sec'y, Macomb, Ill.

A lateral incisor was implanted by the editor Saturday, June 11. In three weeks it was firm, and the color is good. The tooth was soaked in 1-1000 bichloride for one night, and previous to implantation it was allowed to stand in a five per cent. solution of carbolic acid for ten minutes. It was maintained at a temperature of 110° F. It was ligated for three days to the adjacent teeth, and then the ligature was removed. It has not elongated. The tooth implanted December 27, is firm, of good color, and is doing good service. There is no recession of the gum, and it is firmly attached around the whole neck.

Dr. DeWitt C. Bacon,  
Dr. Marie A. Thompson,  
Married,  
Wednesday, July Thirteenth,  
Eighteen Hundred and Eighty-seven,  
Chicago.

Dr. Bacon is a graduate of the Chicago College of Dental Surgery, and his wife graduated at the University of Michigan. We extend our congratulations.

The syringe recently perfected by J. Austin Dunn, D.D.S., of Chicago, is a most valuable adjunct to the dentist's operating case. That delicate manipulation in the treatment of pyorrhœa alveolaris, and alveolar abscess, required in introducing the remedies to the exact seat of the disease, can only be done by such an instrument. The fine steel or gold point makes it possible to be introduced into very small channels, and pressure enough can be exercised upon the rubber bulb to force cleansing fluids or medicines considerably beyond the point of the needle. A practical test of this instrument for several months convinces us of its great merits.

It is the many little things nicely done which go far to make an accomplished operator. Dr. Swasey uses the gutta-percha solution with cotton in a way which is original and will, we think, commend itself to all. The pledget of cotton is saturated with the solution and allowed to stand on a piece of porcelain for some three minutes, before it is needed. When it is used the surface will be dry and its whole substance will be denser and spongelike. It is used to retain dressings in cavities and for the final wedge after separating. Dr. Swasey preserves the gutta-percha solution from evaporation by keeping it in a wide mouthed bottle with a cork stopper. The bottle is kept standing on its cork end when not in use—try it.



A correspondent of the REVIEW says: "I am frequently troubled in filling the undercuts and retaining pits against the buccal wall of distal cavities in bicuspid and molars. I have tried the reverse pluggers recommended by Dr. Black, but so far have failed in accomplishing what he claims can be done with such instruments. I have for three or four years been trying to overcome or master some of the difficulties of filling these cavities, bicuspid in particular. I hope I have learned some things in the effort, one I will mention, the pluggers must have free range in the cavity. No doubt many of us meet with the same difficulties, and are oftentimes perplexed as to just how we can best adapt the fillings to the walls, to be sure that no imperfections will be present when the operation is complete."

Dr. B. J. Bing, of Paris, France, writes us, that, in planting teeth into artificial sockets, an impression of the root of the tooth to be implanted should be taken, and a smooth steel wedge made to correspond with the size and shape of the root. In preparing the socket, the steel wedge should be fitted until the desired shape is obtained. This, in his opinion, will permit placing the tooth into its position without injury to the periosteum. He claims, that, in those cases where no absorption of the root occurred before ten years, he has implanted them in that manner; while those which were driven into their sockets, were attacked by absorption much sooner. From this statement we would be led to believe that Dr. Bing has practiced implantation (he possibly may mean transplantation or replantation) more than twelve years.

In the bill recently presented to the Chamber of Deputies in France, the following relates to dentistry: The practice of dentistry is forbidden to all persons not provided with the diploma of doctor or *officier de santé*. Nevertheless, any dentist over thirty years of age, who can show by his license that he has practiced his profession for two years before the promulgation of the present act, is allowed to continue to do so. This permission, however, does not include the right of administering anæsthetics. Foreign medical diplomas are not registrable except in special cases covering the city of Paris. From the above regulations, it may be seen that a D.D.S. member of the American Medical Association would have some difficulty in beginning practice in France. If the bill passes, fewer Americans will go to Paris to practice dentistry, as all the examinations will be conducted in the French language.

Dr. Edwin Powell, of Chicago, has succeeded in arresting persistent neuralgia of the tongue for a period of more than one year, by operating as follows: He makes an incision at the entrance of the inferior dental nerve into the inferior dental canal, sufficiently large to allow of the pulling out or stretching of the nerve about one-half inch, which is then divided and the half-inch removed. In one case the external operation was made, the nerve exposed and a portion removed. Pain recurred in a few months. The lingual nerve was then exposed and operated upon twice, without success. The operation above mentioned was then performed, and so far there has been no symptom of returning pain. This is a feasible operation and one which a skillful dentist ought to be capable of making with little risk or danger. It ought to be attended with little hemorrhage, and can be made painlessly by previously injecting cocaine (four per cent.) or using Vial's solution (cocaine dissolved in a two per cent. solution of carbolic acid,  $\frac{1}{4}$  gr. in x minims). Whitehead's staphyloraphy gag can be used, or any approved mouth-prop.

Here is your chance:

———, July 13th 1887.

Dear Sir

no doubt you will be surprised to receive a letter, I am still in the Dental business here. but for the last 3 or 4 months I have been offering my Office & Laboratory fixturs for Sale. If you know of any Dentist that is looking for a location send him here and I am shure I can give him a good bargain. And *start* him in a fine practic. there is another dentist here and he is very Anctious to buy me out if he can get some one to go in with him and run the two offices as one or in other words run in partnership. he is a very nice man and I think very easy to get along with. My things will invoice \$500 and I offer them at \$300 and I can give time on the most of it, I have spent seven years here very pleasantly built up a good practice and made some money, and now I wish to retire from practice and moove to California. hoping you may be able to send me a purcheser I will Close, with Kindest Regards

A correspondent has sent us the following as having been received by him some time since:

———, Dec. 12, '85.

——— Sir—

I rec. a letter from ——— to-day Saying Some teeth I filled was not doing well & that he went and had them Examined that is he gave me no name but I consulted the State board of Dental Examiners & found your name thare & you said the man that filled them aught to be arested & iff you had his name you would publish him now sir my name is ——— & my address is ——— & iff you did this it was Damed unprofessional & no Gentleman would do it & iff I hear any more Such uncalled for slander I will come to ——— and tend to your cas & do it in good ord now Dr iff I am addressing the rong man I beg Pardon but that is all the name I could find att that ad ——— yours written on the side of a house

The letter writer had filled seven teeth with amalgam, in a hour, and the teeth *were* somewhat rocky.

#### SOUTHERN DENTAL ASSOCIATION.

NASHVILLE, TENN., July 18, 1887. — The meeting of the Southern Dental Association, at the Hygeia Hotel, Old Point Comfort, Va., August 30th, promises to be a grand success, if not the largest meeting of the dental profession on the continent. The Central Traffic Association, as well as the Southern Passenger Association, will give reduced rates to those who wish to attend. Those purchasing tickets from Central Traffic Association agents will get certificates from railroad agent when procuring tickets, which will enable the holder to return from "Old Point" for one-third fare. Those who wish to take advantage of the reduction offered by the Southern Passenger Association will apply to Dr. J. Y. Crawford, Nashville, Corresponding Secretary, for certificates, which will enable the holder to make the trip by paying one and one-third fare. Tickets to be good twenty-four hours after adjournment of meeting.

The Virginians, and our noble, grand old President, Dr. W. W. H. Thackston, are exerting themselves to make the meeting a grand one. A cordial invitation is extended to all,— East, West, North and South. J. Y. CRAWFORD, Cor. Sec'y.

From a statement made by Dr. Rauch, secretary Illinois State Board of Health, it appeared that there were, in round numbers, on July 1, 1877, an aggregate of

7,400 persons engaged in the practice of medicine in Illinois. Of these about three thousand eight hundred, or more than one-half were non-graduates, and these comprised all classes, including those who had assumed the title of "Doctor," without any medical study whatever. The following gives a comparative exhibit of the status of the profession at the beginning and at the end of these ten years:

	1877.	1887.
Total number engaged in practice .....	7,400	6,180
Graduates and licentiates .....	3,600	5,704
Non-graduates .....	3,800	476
Percentage of graduates and licentiates .....	48.6	92.3
Percentage of non-graduates .....	51.4	7.7

When the new law went into effect there were 1,923 physicians in the state who were not qualified, and therefore could not comply with its provisions. Of these by far the greatest number left the state, others abandoned practice, while many qualified themselves and graduated or passed the examination of the board. Such an exhibit is certainly gratifying, and we wish as much could be said of dentistry. The percentage of graduates has increased from 48 in 1877 to 92 in 1887, a period of ten years. A table of this character from the records of the Secretary of the State Board of Dental Examiners would be interesting reading.

INTERNATIONAL MEDICAL CONGRESS, WASHINGTON, D. C., SEPTEMBER 5, 1887.  
SECTION 17.—DENTAL AND ORAL SURGERY.

*President*—Dr. J. Taft.

*Vice-Presidents*—Dr. W. W. Allport, Chicago, Illinois; Dr. F. Abbott, New York; Dr. W. C. Barrett, Buffalo, New York; Dr. S. W. Dennis, San Francisco, California; Dr. C. L. Ford, Ann Arbor, Michigan; Dr. W. H. Morgan, Nashville, Tennessee; Dr. H. J. McKellops, St. Louis, Missouri; Dr. A. T. Metcalf, Kalamazoo, Michigan; Dr. A. L. Northrop, New York City; Dr. A. O. Rawls, Lexington, Kentucky; Dr. Joseph Richardson, Terre Haute, Indiana; Dr. C. W. Spalding, St. Louis, Missouri; Dr. L. D. Shepard, Boston, Massachusetts; Dr. James Truman, Philadelphia, Pennsylvania; Dr. W. W. H. Thackston, Farmville, Virginia; Dr. V. E. Turner, Raleigh, North Carolina.

*Foreign Vice-Presidents*—Prof. Dr. F. Busch, Berlin, Germany; Dr. W. Herbst, Bremen, Germany; Dr. L. H. Hollander, Halle, Germany; Dr. Andrieu, Paris, France; Dr. E. Magitot, Paris, France; Dr. V. Haderup, Copenhagen, Denmark; Dr. T. H. Harding, London, England; Dr. W. Geo. Beers, Montreal, Canada; Mr. C. Spence Bate, Plymouth, England; Mr. Wm. B. Macleod, Edinburgh, Scotland; Dr. R. T. Stack, Dublin, Ireland.

*Secretaries*—Dr. E. A. Bogue, resigned, succeeded by Dr. A. M. Dudley, Salem, Massachusetts; Dr. F. H. Rehwinkel, Chillicothe, Ohio; Dr. E. Brasseur, Paris, France; Dr. E. E. Foerberg, Stockholm; Dr. Paul Schwarze, Leipsig, Germany; Mr. J. Smith Turner, London, England.

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Hotel Headquarters at the "Arlington."

Dentists can secure space in a special car to Washington, Saturday, September 3d, by applying to Dr. Frank H. Gardiner, 126 State Street, Chicago.

## OBITUARY.

Dr. J. R. Walker, of New Orleans, departed this life June 22d, 1887. We have received no details concerning his sudden demise, but we are sure that he will be missed in professional circles, and we tender to his widow and family our sincere condolence in their sad and sudden affliction.

### RESOLUTIONS ON THE DEATH OF DR. JAS. S. PERKINS, OF MILWAUKEE.

WHEREAS, Death has invaded our ranks and removed from us one of our most useful, honored and beloved members, therefore be it

*Resolved*, That in the death of our former president and fellow laborer, Dr. J. S. Perkins, this society and the profession at large, has sustained an irreparable loss, which is keenly felt by us, individually and collectively. We hereby express and declare our unqualified love and respect for his memory, our full appreciation of his integrity and worth as a gentleman and a dentist.

To his bereaved wife and children we extend our heartfelt sympathy and assurance that we each and all feel personally bereaved in a manner impossible to express in mere words.

*Resolved*, That these sentiments be spread upon the records of this society and a copy transmitted to his family.

CHAS. C. CHITTENDEN,  
GEO. H. MCCAUSEY,  
E. F. LONG,

Committee.



# THE DENTAL REVIEW.

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VOL. I.

CHICAGO, SEPTEMBER 15, 1887.

NO. II.

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## ORIGINAL COMMUNICATIONS.

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### A PLAIN TALK ON DENTAL ETHICS.

Read before the Wisconsin State Dental Society,

BY C. C. CHITTENDEN, D.D.S., MADISON, WIS.

I have a few words to say on moral philosophy as applied to the practice of dentistry. "Ethics," "Moral Philosophy," "The Science of Duty,"—the principles which prescribe what ought to take place in human conduct and action.

There is absolutely nothing new in what I have to offer you, but old truths are so apt to become trite and common-place that, if inclination or self-interest seems to demand it, man is very prone to forget (or try to) that truth stands as a flaming sword in his path.

Our professional forefathers foreseeing with the prophetic eye of patriarchs and seers, that dentistry was destined to become a distinctive profession, with all its possibilities, duties and responsibilities, wisely, it seems to me, undertook the codification of a set of general rules of conduct by which it was meet and proper for dentists to be governed in their contact with their compeers and patriots. With large hearts, wise heads and a clear understanding of the eternal fitness of things the American Dental Association clothed them in the most concise and comprehensive language for the guide and government of the profession at large. This "code," as it is called, has been adopted as the prescribed and accepted rule of conduct of all respectable associated bodies of dentists in this country at least, and we, the Wisconsin Society, require that each and every one of our members shall subscribe to its sentiments. But, as alas is too surely the record of all history of man and his doings, pride, avarice, ambition, cu-

pidity, incompetency, one, or all, have the same old devil's power to lure men from the path of known duty and rectitude, and we as a society are called upon yearly to bring to book one or more of our own number for a more or less flagrant ignoring of his known obligations to the "Science of Duty."

Some there are who for their own base ends cut themselves loose from all restraint with full knowledge and intent, because (they will tell you) there is money in it. Verily, they have or think they have, their own reward. Others are tempted to fly close to the singeing flame for the reward of seeing themselves well mentioned in the public prints, hoping all the time they may escape a scorching, still others are (or think they are) driven by sheer necessity and the law of self-preservation to proclaim their wonderful talents and cheap services to the world, hoping thereby to out-Herod some competing Herod.

With the first named class we have nothing to do in this paper for they are not of us. The second class are either hypocrites and so belong not with us, or they are weak misguided fools, and need awakening to a sense of their position by a little wholesome discipline, and warning, which, if applied in the right spirit and received in the same spirit, is all that is needed to effect a complete cure. Just here lies the difficulty—to convince a fool of his own folly. His head is generally so filled with his own convictions of himself that it is very difficult to find room for a healthy change of sentiment to take root.

For the third class we have often much sympathy, and of their case I have mainly to speak. In what way shall we antagonize the "Cheap John," this prevailing omnipresent advertiser of his so-claimed superior skill and cheap services. We have no ethical jurisdiction of him unless he becomes one of our society. He comes to our meetings, sits in the background, soaks up all he can assimilate in the way of advancement, puts his head in the way of those who have the better right to overlook the clinics, is generally the best listener and most regular attendant on the sessions—in fact steals all he can of the best thought and labor of the worker, then goes home, puts an "ad" in the local paper that he has "just returned from the State Society, and is now better able to do the finest operations at less prices," etc., etc. (You all know the gag.)

His competitor, a member of our society, trying to obey the code, finds perhaps that the public, always willing to get something for nothing, are listening to the song of the siren. His business lags and he sits staring at his office walls and unpaid accounts until at last he can bear it no longer, and rushes madly into print in the hope of calling back his former patients. To do this he must either leave the society or be brought to trial for violation of the code. Now, gentlemen, this is a state of things too often to be found, and, as "nothing is without a cause," let us search if perchance we can find the diagnosis, and the proper remedy. First, to diagnose: A dentist and his practice always are and always will be just what he makes himself and it, and it is the easiest thing in life for such things as self-satisfaction, indolence, carelessness and indifference on the dentist's part, backed by the conceit that his hold on his patients is unassailable, to ruin the best practice. On the other hand, if in each case treated, the patient is convinced that the very best has been done up to the latest possible attainment, then not only will it be impossible to drive that patient elsewhere for dental operations, but he will be worth gallons of printer's ink used in promising everything for little or nothing, for he will send his friends and neighbors to the dentist that he believes in. The treatment is self-evident. Let the office be kept scrupulously neat and attractive, the person free from all criticism by the most fastidious, the manners kind, courteous and sympathetic, avoiding all self-glorification or censure of competitors, in fact be what you would have your patient think you—honest, intelligent and competent, and gentle withal, and from the experience of a life's observation I can assure you that no flaming claims of an empiric will ever be able to draw from you a single patient if he be worth retaining. If, on the other hand, the competitor is the better man in all these respects your case is indeed desperate, and printed claims to the contrary will not avail. Don't waste money and self-respect in the experiment.

Finally, gentlemen, if money or fame, or anything else save an honest, earnest desire to be of some good to your fellow man is the leading motive inspiring you to follow this high calling of ours, take a little sound advice and go into some other line of business. God never meant you to be a dentist.

## REFLEX ACTION OF THE FIFTH, OR TRIFACIAL NERVE.

Read before the Wisconsin State Dental Society.

BY DR. J. S. REYNOLDS, MONROE, WIS.

Gentlemen, this is a subject that has received but little consideration from the dental profession at large, and in our dental text books we find there has been but little written. The spinal cord offers the best and most numerous examples of reflex action. The essence of a reflex action consists in the transmutation, by means of the irritable protoplasm of a nerve cell, of afferent into efferent impulses; as an approach to a knowledge of the nature of that transmutation, we may lay down the following proposition; the number, intensity, character and distribution of the efferent impulse is determined chiefly by the events which take place in the protoplasm of the reflex center. It is not that the afferent impulse is simply reflected in the nerve cell, and so becomes with but little change, an efferent impulse; on the contrary an afferent impulse passing along a single sensory fibre, may give rise to efferent impulses passing along many motor nerves, and call forth the most complex movements. An instance of this disproportion of the afferent and efferent impulses may be seen in the case where contact with the glottis of a foreign body so insignificant as a hair, causes a violent spasm of coughing. Under such circumstances, a slight contact with the mucous membrane such as could not possibly give rise to anything more than a few feeble impulses, may cause the discharge of so many efferent impulses along so many motor nerves, that not only all the respiratory muscles, but almost all the muscles of the body are brought into action; similar, though less striking instances of how incommensurate are afferent and efferent impulses, may be seen in reflex action.

## THE CAUSE OF REFLEX ACTION.

The attributes of our climate may be considered relatively dry, with prevailing northwesterly winds during at least seven months in the year, with extreme changes; with a variation of the temperature of from 40 to 60 degrees in from 6 to 12 hours; this climate is extremely trying to the nervous system. It is a matter of observation to the medical practitioners that this climate is very trying to one, particularly to those of the sanguine nervous temperament. A member of our profession must con-



sider himself only partially educated, if he limits himself to the simple duties of the dentist and goes no further than the restoration of teeth by filling, and the replacement of the lost ones by mechanical means, ignoring the many cases of neurotic affections that are daily met with in this climate, where they assume a complex character, challenging greatly the judgment of the dentist, until he is compelled to recognize their existence among other disturbing elements. I am well aware that some may think we are encroaching upon the duties of the general practitioner, but a little reflection will convince any of us that we may add something to the sum of investigations in the treatment, restoration and prevention of neurotic cases, and in throwing out these queries, I do it with a hope of awakening among you, gentlemen, a train of thought that may be a benefit to us all.

In treating this subject, I may better illustrate it by examples, and design, by an inquiry into the reflex action of the Fifth Pair of Nerves. Bear in mind, "Brother Practitioners," that I am with you in seeking after truth, that we must first find out a full array of facts, and from thence educe our theories, and that the truth can in no way be found, except we throw selfish motives out of sight; and if we find that large contour fillings are really reservoirs of thermal influences to send their thrills to the co-ordinate terminal nerves, if we find capping of exposed pulps, or the filling of root canals, heavy malleting by injuring the periosteum, or if the rapid revolutions of drills or disks and corundum wheels, and if in our minds this modern method of rapid operating is injurious to dentine and peridental membrane, then it is our duty to investigate and adopt such methods as we may in time find to be less injurious. It seems to me that the practitioner who practiced twenty and twenty-five years ago, did not have the amount of trouble in this direction that we have at the present day. Anæmia, malaria, and syphilis are some of the causes that produce reflex action. I might mention a few of the remedies used in the treatment of reflex action of the Fifth Pair of Nerves. Constitutional measures must be adopted in cases of anæmia, malaria and diseases of syphilitic origin. Such you will find in the medical text books on the therapeutics and general practice. I would refer you to Hammond, Ranney, Brown-Sequard, Seguin and Flint; also many others. They suggest the use of tonics,

iron, quinia, strychnia, Fowler's solution of arsenic, iodide of potassium, etc. Also electro-therapeutics. Electricity is taking high rank as one of modern treatments in all neurotic diseases. Likewise local or palliative treatment.

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### THE FIRST PERMANENT MOLAR.

Read before the Indiana State Dental Association June 30, 1887.

By A. J. SMITH, D.D.S., GREENFIELD, IND.

There are perhaps no teeth about which more has been said than the first permanent molars, and there are none more in need of further consideration, because there are none more valuable and none more neglected. My subject, therefore, though "old and threadbare," is still one of importance, but whether I can say anything concerning it of interest, is another question. Being young in the profession I will not presume to advise what is best to be done for these teeth in their different stages of disease, but will briefly tell you what I do for those that come under my care; and if any one has a more conservative treatment for them, I shall be pleased to hear it, for there is no operation in the practice of dentistry which so moves my sympathies or goes so against my feelings as the extraction of these teeth for children. First permanent molars coming under my care soon after the second molars have erupted I fill, if they give promise of lasting three or four years, telling the patient that if we can save them for that length of time, we may then know of some better means for saving them longer; and if not, it will prevent the tooth back of it from tipping forward, which would occur if the first molar be extracted; this consideration alone is worth more than the cost of the filling to the other tooth. Like all other rules for these teeth there are exceptions to this one. If the pulp is dead, the pericorion and gum inflamed, I consider them in a precarious condition and generally extract at once; if the teeth are already crowded and some irregularity present that their room will correct, I consider extraction indicated. The treatment of the first permanent molars after the second molars have erupted, is an easy matter compared with the treatment of them before. These teeth are so imperfect and incomplete in structure as to render them prone to caries; they appear at an age when the child has

barely emerged from infancy, and still requires the gentle handling demanded by tender years. It frequently happens that the child's first introduction to a dentist is brought about by the aching of one of these teeth. Only a few days ago a father came to me with his little delicate seven years old son, to have something done for the toothache; upon examination I found the trouble to be in the left inferior first permanent molar, which was in a deplorable condition. The enamel entirely gone, except a small ledge on the buccal surface, the dentine a pulpy mass of about the consistency of cork, pulp nearly exposed and highly inflamed,—had been aching for three days. This was the child's first acquaintance with a dentist, but he had a very distinct recollection of meeting a physician only a few days previous who mistook the mate to this one (the right inferior first permanent molar) for a temporary tooth, and in attempting to extract it broke it off just below the gum, leaving a live pulp exposed, and the boy with a life-long horror of having a tooth extracted. I advised the parent that the tooth now under advisement was beyond redemption, and the only means of relief existed in extraction; upon which the boy's courage seemed to fail at once, and he began crying, vowing he would not have it out. I suggested giving the boy an anæsthetic and taking the tooth out without pain, knowing it would be a pretty severe operation, and in face of the misfortune he had had with the physician I did not wonder at his not having the courage to undergo the operation. But the father opposing the anæsthetic I told the little fellow I would put something in it to keep it from hurting for a while and see if we could possibly save it, my object being to gain the boy's confidence and get him and the tooth both in better shape for the extraction. After removing as much of the softened dentine as I could without much pain, and drying the remainder with cotton, chloroform and the chip-blower, I saturated the cavity with carbolic acid on cotton and placed a rubber ligature around the neck of the tooth, dismissing the little patient until it gave him further trouble. The next day they returned, of the opinion that the tooth could not be saved, and seeing it was considerably loosened, with a little encouragement the boy consented to have it extracted. The operation was more severe than the child expected, still it was much easier than it would have been but for the work of the

ligature. First permanent molars giving trouble by the seventh or eighth year, I, as a rule, endeavor to save until the ninth or tenth year, if I can get them before the pulp dies or has to be destroyed, as frequently the deficiency of solidifying materials will have been supplied by this time, and the tooth then may be permanently saved; and if not, the child is better able to stand it, and can better afford to lose it then than sooner, and it will yet be in time to allow the second molar to come forward bodily instead of tipping. There are cases like the one just described in which there is no chance to give even temporary relief, and extraction seems the only resource, and in such cases I consider it the part of kindness and humanity to use an anæsthetic, as children possess a thorough immunity from the dangers attending their administration. Besides, it is desirable to avoid inflicting severe pain at this age, so that we may not create a lifelong dread of dental operations, which is so often done to the keen remembrance of suffering in childhood. I have no definite or specific rule for extracting or saving first permanent molars, nor do I think any is practicable. What seems to me to be far more important is to instruct and educate the parents to have their children's teeth cared for in time. Many parents think attention is unnecessary for the temporary teeth, and know nothing at all about the first permanent molars until they are badly decayed and aching, and are informed by the dentist that they are permanent teeth. Then they say: "I thought they were baby teeth, or I would have had them filled long ago." Hence the importance of parents knowing the necessity of having their children's teeth cared for at an early age. The almost total lack of dental literature giving instruction on the most important of all subjects that affect the health and comfort of the people, is not altogether creditable to the dental profession; for it is to the dentists that people must look for right teaching in this direction. About the only hope of restoring perfect teeth to Americans of future generations lies in the care and intelligent use of means placed in the reach of the mothers of our land. To them and not to the dentist is committed the trust and responsibility of remedying many of the evils from which we now suffer, but the duty of proper instruction is with the dentist. Now some one may say that for us to give this instruction is an endless task, for which



we would receive poor pay. So it may seem to many of you at first thought; but if each of us would go to work earnestly and embrace each opportunity of imparting a few words of advice to parents regarding the early attention their children's teeth should receive, in a very few years we would be able to see our progress—not only by the better teeth of children, but by a better appreciation of our profession by the public generally. One writer on this subject has said: “The time will come when we as dentists shall feel largely responsible for the original character of children's teeth; that we are mere workmen in the art of dentistry and so subordinately professors in its science; that we feel little responsibility for instructing our patients. We call our patrons patients, but they come to us more as customers, and therefore only for our skill. But when they come to us for advice and we are able to sustain ourselves as teachers, we will have a higher claim to the title of professional gentlemen.” Our relation to those we serve and to the public should be of so much confidence, dignity, and learning, that mothers will come to us for instruction to prevent bad teeth in their children that shall reach their own habits prior to their children coming into the world. Our patients should be made to feel that our advice is worth as much as our skill. But this feeling can only be established subsequent to the education of the people to an appreciation of its importance.

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#### A COURSE OF READING FOR DENTISTS.

By J. D. MOODY, D.D.S. MENDOTA, ILL.

In answer to numerous inquiries I have arranged the following outline of study and work. It is one, too, which I believe will be found to be both profitable and intensely interesting. Although not very extensive, it will give a good idea of some of the basal principles upon which our professional knowledge rests. It will make excellent filling in for rainy days, dull days and evenings.

I am confident that once commenced it will not be dropped. The arrangement is the outgrowth of actual trial. Having proven satisfactory to others, and believing that it will in some degree meet a want which has been felt by many dentists, I give it the advantage of the wider circulation of the REVIEW.

The books to which I refer may not be the best ones in these different departments, but they are all good authority and I mention them because they are just what I used myself, and they answered the purpose very well. If desired, others in the same lines could be substituted for them.

Even if simply read through carefully, this course would result in much profit. But it will be found not only a delight but a real recreation of easy attainment to pursue it as laid down. A microscope will be needed. One of the cheaper stands of a reputable maker and the "Student" series of objectives will answer every purpose. However, if one has had some experience I would advise getting the better class of objectives. A  $\frac{3}{4}$  and a  $\frac{1}{4}$  objective will suffice, although better work could be done by having a 2 in., a  $\frac{1}{10}$ , a  $\frac{1}{8}$  and a  $\frac{1}{16}$  objective. The  $\frac{1}{4}$  and  $\frac{1}{8}$  should be dry objectives and have long working distance combined with flatness of field. The little work, *Microscope for Beginners*, by Dr. Stokes, will be very helpful to the inexperienced. Of books first get *Structural Botany*, vol. I. of Gray's *Botanical Text-Book*. Read it through carefully. Understand it. Next get *Physiological Botany*, vol. II. of the same series, by Goodale. Study through to page 195, using microscope. Then get *Practical Botany* by Bower and Vines, and work out with the microscope all of the different tissues there given. Don't slight this part of the work. For reference use *Plant Dissection* by Arthur, Barnes, and Coulter. It will be a good plan before beginning this work to gather specimens of all the plants required, and put in alcohol for use in the winter. This part of the work will be very fascinating. A cabinet of beautifully colored specimens can soon be secured.

After completing Bower and Vines take up Goodale again, beginning at Part II., page 195. Read through once carefully in order to get a picture of the whole, then go back and study section by section, using the microscope constantly. If you have access to Sach's larger work use it in reference. Also in this connection read Foster's *Physiology*, Book II., especially chapter 5, and the appendix on the Chemical Basis of the Animal Body. Also read the articles on Physiology, both animal and vegetable, and Nutrition, in the *Encyclopedia Britannica*. And a very sim-

ple and very helpful little work, *Wonders of Plant Life*, by Mrs. Herrick.

When through with these procure *Fermentation*, by Schützenberger. Give it also a careful reading and in connection read *Pasteur and His Labors*, *Micro-Organisms* by Black, the articles by Miller in the *Independent Practitioner* and the *American System of Dentistry*, and *The New Chemistry*, by Cooke. Take up one subject in *Fermentations* and compare it with the same or similar ideas in the others. Do this thoroughly. Now get *Practical Biology*, by Huxley and Martin. It will not do to simply read this if you wish to make anything of it. It must be studied. The microscope must be constantly in use. If possible this part of the work will be more fascinating than any of the preceding. With this the wayside ditch becomes a pleasure resort and the stagnant pool a paradise. A world of new beauty, such as we had not realized before, is opened up to our sight. Beginning at the very portals of life we ascend in the scale of organized being from the yeast plant up through the amœba, moulds, bacteria, ferns, beans, hydra, and mussel until the dissection of the cray fish and frog, completing the study, gives us an insight into the possibilities of recreative study undreamed of in our idle moments. Having thoroughly gone over this course, we have laid foundations upon which real scientific work can be done. In connection with *Practical Biology* read *Microbes, Ferments, and Moulds*, by Trouessart, and *Microscopic Fungi* by M. C. Cooke, and using *Howe's Atlas of Biology* for reference.

This course completed we are ready to branch off into any specialty our inclinations may direct us—such as embryology, histology, physiology, etc., etc. But to the dentist one of the most practical as well as most interesting of these “between-time studies” will be bacterial investigations. Get Klein's little work on *Micro-Organisms*, and supplement it with anything else you can get, Hueppe, Miller, Sternberg, Black, etc., etc. But do not fail to read and follow out the eminently practical and plain directions of Dr. Black, as given in the *Transactions of the Illinois State Dental Society* for 1886 and 1887.

For the technique of bacteriology I have liked best the articles by Cheyne in the *American Journal of Medical Sciences* for 1886 and 1887.

I hope others may follow up this idea and give us out of their own experience other schemes of study. Especially do we need one in which chemistry is the underlying thought as biology is in this one. Also one on embryology, one on histology and one on microscopy.

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### MATRICES AND SEPARATORS.

By THOS. B. WHEELER, D.D.S., CHICAGO, ILL.

The first matrix we can find record of was composed of pieces of wood and metal, such as broken files, etc., used to make a temporary wall for a decayed tooth. These crude appliances were used with the same object in view as the matrix of to-day, viz—to keep the first layers of gold in position and making a simple cavity out of a compound. These matrices were used by wedging them between the cavity of decay and an adjoining tooth. This appliance was improved later by Dr. Louis Jack, of Philadelphia, who gave to the profession the well-known “Jack matrix,” which consists of a piece of steel, grooved on the side to be filled against, and is retained in position by a piece of wood forced between it and the tooth posterior or anterior as the case may be.

On account of its rigidity and non-yielding qualities a great many imperfect fillings have been introduced, and no doubt, the failures caused by this method led many in the profession to look upon it with disfavor. About thirteen years ago Dr. Robert Huey of Philadelphia invented the first loop matrix; he undoubtedly recognized the necessity of employing a metal that would either spring or stretch, and with this in view, constructed a thin band of platinum about 35 or 40 gauge of different lengths. These bands were doubled at the ends and holes were punched for the reception of a screw, which consisted of a small bar of steel made with a thread and nut; this was put through the holes in the band, the latter was drawn around the tooth to be filled; this had the advantage of being thin and flexible, so that the filling material could be forced between it and the margins of the cavity, which was not permissible with the Jack matrix; also it was not necessary to have an adjoining tooth to keep the appliance in place.

Since that time a number of matrices have been offered to



the profession, some possessing considerable merit while others are nearly worthless; in glancing at the list thus far there has been but few improvements over the Huey matrix, and they are nearly all based upon the same principle.

The Brophy and Guilford matrices are different. Dr. Brophy's matrix is a continuous band and the Guilford matrix encircles about two-thirds of the tooth, having the advantage over others that it is only placed between the teeth to be filled, for sometimes the teeth are so crowded that it is painful to force anything like a steel or platinum band in the extra spaces.

In regard to filling materials used, I have only to say that if you wish a failure in matrix-filling use cohesive gold at the margins or the beginning of your filling, and you will be called upon in a very short time to refill the teeth.

Non-cohesive gold must always be used, combining it with tin if you wish; my practice is to prepare the cavity properly, making the grooves for anchorage as near the grinding surface of the tooth as possible and adjust the matrix; then I roll gold and tin together, using No. 4 of each, adopting the method first brought to my notice by Dr. A. W. Harlan; these are rolled together, cut into pellets of suitable size, and the margin and floor of the cavity is covered with two or three layers of this combination, care being exercised to force a portion of the soft mass between the matrix and the margins, and it is necessary to have the proper instruments, otherwise the margins will be bruised and failure will result.

Beautiful contour work can be done by loosening the band, ordinarily the elasticity or spring of the matrix is all that is required.

I think there is no better way to demonstrate the difference between non-cohesive and cohesive gold, than by using it in this connection, and it is reasonable to suppose that if cohesive gold can not be packed into the spaces between the matrix and tooth, it is not the kind of gold to use within the cavity walls. After the lining of tin and gold, the tooth should be filled about two-thirds full with non-cohesive gold, then finish with cohesive on the masticating surface.

Time and space forbids me the discussing of the many different theories of preparing cavities, and as this paper does not espec-

ially treat of that subject, very little will be said; but one great advantage we have in matrix-filling is that it is not necessary to make grooves or retaining pits of any description in the floor of the cavity, thereby saving valuable tooth substance at the point where they should be strongest. Another important factor, it is far less painful. After the gold has been inserted and the matrix removed, finish in the usual manner which does not require much time as there is very little surplus material to remove. I do not consider the Miller matrix superior to that of Dr. Jack's for the reasons that when wedged in place, it has no yielding qualities and considerable space is required between the teeth to insert it. It would be impossible to contour a filling with its use for it could not be removed after building the gold to the required contour, and in this respect the Jack appliance is preferable.

There has been so much written about separators that little remains to be said. Probably the best and most used at this time is the instrument invented by Dr. Perry. It is very valuable where space is required which can not be obtained by the ordinary methods of wedging. In that class of cases where the crowns of the teeth are very much larger than the neck, wedges of cotton, wood, or rubber can not be successfully employed without impinging on the gums, thus causing inflammation. The separator can be applied and slowly spread without causing severe pain and the space thus obtained is surprising. They are also valuable in separating teeth that have been filled without their use by simply applying the separator to procure space for proper finishing. They are also useful in cases where the teeth are loosened through any cause, as the pressure will hold them firmly while the gold is inserted, causing less pain to the patient and a better filling will be made. They can be used in connection with the Brophy and Guilford matrices.

I understand from a gentleman of the S. S. White Dental Mfg. Co. that a universal separator is being made that will replace the Parr and Perry instruments. There is a necessity for such an appliance, as those now in use can not be employed with success in many cases, as the bows are not large enough to pass over the largest molar tooth.

## PROCEEDINGS OF SOCIETIES.

## NORTHWESTERN DENTAL ASSOCIATION.

The fifth annual meeting was held in Fargo, Dak. July 26 and 27, and in addition to the regular routine business the following papers were presented and discussed by those in attendance: "President's Address," H. L. Starling, Fargo, Dak.; "Dentistry and its Relation to Art," M. G. Jenison, Minneapolis, Minn.; "Bridge Work," T. E. Weeks, Minneapolis, Minn.; "Some Pertinent Questions," W. H. Barker, Miller, Dak.; "Influence of the Dental Chair," W. H. Williamson, Bismarck, Dak.

Fargo was selected as the next place of meeting, and steps were taken to make it an assured success.

Dr. J. W. Cloes of Jamestown, Dak., was elected President and Dr. S. J. Hill of Fargo, Dak., was re-elected Secretary.

The following are abstracts of the papers read:

## DENTISTRY AND ITS RELATION TO ART.

BY M. G. JENISON, MINNEAPOLIS, MINN.

Art taken in its broader sense might be applied to almost any trade or profession, for we could with perfect propriety term any man an artist who has made himself master of his specialty. In a more restricted sense, we come to the fine art which would naturally be placed in a higher scale than those including all mechanical pursuits. \* \* \*

Consider some of the plastic and restorative operations in surgery, and see ugly and unsightly marks on the patient obliterated, noses built up and restored where the original organ from some cause or other has been lost. Thus poor mutilated humanity is restored in various ways, rendering the sufferer more presentable to the world and the world more of a pleasure and delight to himself. Now let us go a step higher and further in the same line and consider the labors, results, and possibilities open to the dentist; he is dealing constantly with both the ornamental and useful, preserving or restoring the proper expression to the countenance and little more than indirectly in a physiological way,

aiding to preserve what should be a natural condition. No mortal with poor, diseased, broken or imperfect teeth can masticate his food properly, and in many cases we find a vitiated condition of all the fluids of the oral cavity. This means in some cases pyæmia. More frequently we find indigestion, non-assimilation of food and the long chain of disorders following in their line. \* \* \*

Artificial substitutes must follow nature as nearly as possible to avoid many of these troubles as a result of their use. If the face is the mirror of the soul, it is also in one sense a mirror of the stomach, for who with dyspepsia and its kindred disorders can preserve a happy countenance? \* \* \*

Some scare patients away by clumsiness and untidiness, others nearly murder them by their unscientific and bungling methods. Good manners, neatness and kindness have their cash value if only considered in that light. \* \* \*

In cases of irregularity the finished and educated man comes prominently to the front, restoring defective, distorted arches and faces to usefulness and beauty, and doing it with comparative ease, to his patients. But in the fields of prosthetic dentistry, come the highest possibilities of restoration and the preservation of external expression.

In the ideal face we have a short, finely-curved and prominent upper lip, a full, round but less prominent lower lip with a strongly marked depression at the base of the lower lip, giving character and expression to the chin. In the nose, mouth and chin you can make no material modification without destroying beauty.

A lecturer on art, by the name of Fuseli, said very truly: "Shorten the nose of Apollo by one-tenth of an inch and the god is destroyed."

Let us notice the relation the nose bears to the upper lip, and the relation of the upper to the lower. The nostrils take the general direction of the mouth; were they to be raised at the posterior boundary, it would give the face a sneering or contemptuous look; were they drawn down it would give a surly or morose expression. In cases where the lower lip is more prominent, restore as far as possible the ideal condition.

An important point is to consider the face in repose and



action, for, as we know, the face varies considerably in these two conditions; a pleasing expression is far more beautiful than a scientifically beautiful outline or contour. In restoration of the cheeks, we must avoid an over or undue degree of fulness, but a thorough study of a patient is the only rule that can govern us. No two faces are alike and we must take into consideration the conditions found in each case, study them thoroughly and work accordingly. "The complete restoration of the countenance with its power of expression by art so consummate in the selection, arrangement and adaptation of its means as to defy detection, is one of the crowning glories of dentistry as an art." \* \* \*

## BRIDGE WORK.

BY T. E. WEEKS, MINNEAPOLIS, MINN.

\* \* \* I shall not begin by confessing that I have encountered difficulties, that not every case was as complete a success as I intended it to be, and while I have not had one *complete* failure, I have inserted some pieces, that in the light of experience, do not shine as brightly as I wish they would. There has been nothing but what the knowledge gained from my own and others' experience has enabled me to correct. One of the greatest and most aggravating difficulties that I have met with has been the splitting of the porcelain faces. These are liable to check in soldering, so that although we are unable to detect it at the time, that portion in front of the head of the pins splits off, even when the point is heavily covered with gold. This species of fracture is very aggravating as the remaining porcelain is so difficult to remove.

That Bridge-Work is destined to play an important part in the conservative and restorative dentistry of the future, I believed from the first, and my experience has not caused me to change my mind. Bearing in mind that all rules are, under certain conditions, subject to change, we find:

That no one form of work is applicable to all cases. That in both crown and bridge-work, pathological conditions must be carefully considered. That bridge-work is really only a step forward from crown-work which I think every progressive thinking dentist has voted a success. (I do not classify under this head any crown operation where the end of the root is enclosed in a

cap or collar, unless protected from further decay by some other certain method, if there be any.) We hear some objections made to trimming and shortening the crown of a molar or bicuspid where little or no caries exist, for the purpose of putting on a crown which is to support one end of a bridge. If you believe that a metal crown will restore to usefulness a tooth whose crown has wasted more or less by the ravages of decay, covering and preventing a recurrence of caries, you must admit that the same operation must also protect a tooth which has lost a portion of its contour by mechanical force.

The only unpleasant result I have ever noticed has been sensitiveness to thermal changes. In only two instances has this been sufficient to occasion the death of the pulp and in both these teeth were quite large cavities. \* \* \* As to the objections raised about the uncleanness of bridge-work, every man who has made bridge-work enough to become familiar with it, feels that the objection to its use on the ground of uncleanness, has been proven to have no force by the experience of every cleanly person who has worn a properly constructed bridge.

TO BE CONTINUED.

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

EBBITT HOUSE, WASHINGTON, D. C.

Saturday, September 3, 1887.

C. N. Pierce, president, in the chair. The following colleges were represented: Pennsylvania College of Dental Surgery, C. N. Pierce; Boston Dental College, J. A. Follett, Wm. Barker; University of Iowa, L. C. Ingersoll, W. O. Kulp, A. O. Hunt, I. P. Wilson; Philadelphia Dental College, S. H. Guilford; University of Pennsylvania, Jas. Truman; Kansas City Dental College, A. H. Thompson, J. D. Patterson; University of California, C. L. Goddard; Ohio College of Dental Surgery, H. A. Smith, J. S. Cassidy; Chicago College of Dental Surgery, Truman W. Brophy, A. W. Harlan; New York College of Dentistry, Frank Abbott; Vanderbilt University, W. H. Morgan, D. R. Stubblefield, R. R. Freeman, O. H. Menus; Harvard University, T. Fillebrown, C. A. Brackett; Missouri Dental College, H. H. Mudd, A. H. Fuller; Minnesota Hospital College, T. E. Weeks,

W. A. Spaulding, C. M. Bailey, M. G. Jenison, E. H. Angle; Baltimore College of Dental Surgery, R. B. Winder; University of Michigan, J. Taft; Indiana Dental College, J. E. Cravens; Louisville College of Dentistry, D. S. Reynolds; Northwestern College of Dental Surgery, M. Stout, F. H. B. McDowell; Dental Department of Northwestern University (Evanston), W. W. Allport, J. S. Marshall, L. P. Haskell; Meharry School of Dentistry, G. W. Hubbard; Atlanta School, John S. Thompson.

Prof. Guilford submitted a printed copy of the codified rules of the association, which was accepted.

J. A. Follett was appointed to vacancy on executive committee.

The committees on text books reported progress, and asked for further time which was granted.

A resolution was offered and passed that none but members of the College Association should be present during the sessions, except by unanimous consent.

The following applications for membership in the association were read and referred to the executive committee:

Louisville College of Dentistry, Louisville, Ky.; Dental Department Southern Medical College, Atlanta, Ga.; Dental Department Northwestern University, Chicago, Ill.; National University Dental Department, Washington, D. C.; Indiana Dental College, Indianapolis, Ind.; Dental Department University of Tennessee.

A recess was taken to allow the executive committee to examine the applications for membership.

The committee appointed to ascertain the standing of foreign dental schools asked for further time, which was granted.

The executive committee reported on the applications for membership, action on which was deferred until 3 p.m. Adjourned.

#### AFTERNOON SESSION.

Minutes read and approved.

The secretary then read a communication from the secretary of the Royal College of Dental Surgeons, of Ontario, relative to the admission of foreign dental schools to membership in the association. This was referred to the executive committee.

The Northwestern College of Dental Surgery, Chicago, was admitted to membership.

The Indiana Dental College was admitted to membership.

The Louisville College of Dentistry was admitted to membership.

The annual dues were fixed at \$3.00 for 1887-8.

The Dental Department of the Northwestern University, of Evanston, Ill., was admitted to membership.

Dr. Fillebrown offered the following:

*Resolved*, That applicants for membership in this association shall be regularly incorporated or chartered dental colleges, or departments of medical colleges or universities, wherein at least one full course of lectures has been delivered, and they shall have been in existence one scholastic year. Adopted.

A discussion here ensued about the construction of the resolution relative to the admission of one-term students in colleges belonging to the association. Adjourned to 8 p.m.

#### EVENING SESSION.

(The following was offered by Prof. Truman but its consideration was postponed for one year): Colleges connected with the National Association of Dental Faculties shall accept the certificates of associated institutions, subject to the rules governing each school.

Dr. Brophy offered the following which was adopted: *Resolved*, That it is the sense of this association that the conferring of honorary degrees be discouraged.

Representatives of the colleges were called upon to state what action had been taken by the respective Faculties with reference to the lengthening of the college year. The reports were not favorable to the lengthening of the college year.

Dr. Spaulding propounded the following query: What studies are graduates of medicine entitled to be excused from in the one year spent in a dental college? It appeared from the statements made by the Secretaries and Deans present that no uniformity of practice was observed in recognizing chemistry, anatomy, physiology and other primary branches.

Prof. Truman offered the following: *Whereas*, At the meeting of this association held at Niagara Falls, August 2, 3, 4, 1886, the following resolution was adopted: *Resolved*, That the Dean of each school be required to furnish the executive com-



mittee with the exact character of the intermediate examination held in his school, and whether or not the examination is final, now therefore be it *Resolved*, That the Deans of the colleges of the various schools under the jurisdiction of this body, are requested to provide immediately the information as directed in the resolution as adopted. Carried.

Adjourned to 9 a.m. Monday.

Monday, September 5th.

In the absence of the President and Vice President, Dr. Brophy, of Chicago, was appointed temporary chairman.

The Treasurer made his report, which was audited and proved correct.

A committee, consisting of Dr. A. O. Hunt (the president failed to announce the other members of the committee), was appointed to take into consideration the propriety of lengthening the terms of all schools not now holding nine months' sessions.

The Dental Department of the University of Tennessee was admitted to membership.

The Dental Department of the Southern Medical College, Atlanta, was admitted to membership.

School of Dentistry of Meharry Medical Department of Central Tennessee University was admitted to membership.

Adjourned to 9 a.m. Tuesday.

Tuesday Morning, September 6th.

After consideration, the application of the Royal College of Dental Surgeons, of Ontario, for membership was on motion denied.

The election of officers was then proceeded with, resulting as follows: President, A. O. Hunt, Iowa City, Iowa; Vice President, Thos. Fillebrown, Portland, Me.; Secretary, J. E. Cravens, Indianapolis, Ind.; Treasurer, A. W. Harlan, Chicago, Ill.; Executive Committee, Frank Abbott, J. Taft, S. H. Guilford.

On motion of Dr. Fillebrown the executive committee was instructed to not report on the application of colleges for membership unless said application was made at least sixty days before the annual meeting.

After transaction of miscellaneous business, the new officers were installed and the association adjourned to meet in Louisville, Ky., August 23, 1888.

## NINTH INTERNATIONAL MEDICAL CONGRESS.

Washington, D. C., U. S. A., September, 1887.

## SECTION XVIII. DENTAL AND ORAL SURGERY—MONDAY, SEPTEMBER 5.

The work of this section was announced in the printed programme to begin at 8 a.m. with clinics in operative and prothetic dentistry by fifteen American dentists. This, however, was postponed on account of the absence of members, they being hindered by the necessary slowness of the registration formalities, and also by the fact that committee on clinics had not arranged all the details.

The first meeting of the section was called to order at 3:30 p.m. by J. Taft, M. D., D. D. S., Cincinnati, Ohio, U. S. A., the president of the Section. There were present about 280 members.

The meeting was opened by an address of greeting by the President, who then called upon Dr. W. W. H. Thackston, of Virginia, to welcome foreign members.

Speeches were also made by Dr. W. H. Morgan, of Tennessee; Mr. Wm. B. Mcleod, of Edinburgh, Scotland; Dr. Metnitz, Vienna, Austria; Dr. Jno. A. Grevers, Amsterdam, and Dr. E. Sjöberg, of Stockholm.

President Taft then followed with an address in which he outlined briefly the history of modern dentistry and set forth the influences which had been most potent in the profession's development.

The secretary announced that Dr. Wm. Herbst, Dr. Parreidt and Dr. Foerberg had sent messages to the effect that they were unavoidably prevented from coming to this country to attend the congress.

Dr. H. L. Cruttenden, of Minnesota, on behalf of the Minnesota State Dental Association, presented the section with a gavel for the use of the chairman.

Dr. Hunt made a report for the local committee of arrangements and offered a resolution of thanks to the school trustees and District commissioners for the use of the Franklin school for clinics, which was adopted.

Other miscellaneous business occupied considerable time.

The first paper was read by R. J. Porre, D. D. S., of Ohio, entitled *Chronic Pyæmia from Dental Origin*.

The secretary read the opening discussion by Dr. Lydston, of Illinois.

The Section adjourned to meet 11 a.m. Tuesday.

## AMERICAN DENTAL ASSOCIATION—TWENTY-SEVENTH ANNUAL MEETING.

NIAGARA FALLS, TUESDAY, AUGUST 2, 1887.

The twenty-seventh annual meeting of the American Dental Association was convened in the Park Theatre at 11 a. m. Tuesday, Aug. 2, Dr. W. W. Allport presiding. The exercises were opened with prayer by the Rev. C. S. Stowitts. After the transaction of miscellaneous business the President read his annual address. At the evening session the Section on Dental Education, Literature and Nomenclature made its report, of which the following is an abstract.

## PART I.

## DENTAL EDUCATION.

The possibility of the postponement of this year's session, as well as the uncertainties surrounding the probable time and place of holding this meeting of the Association, has made it impossible to secure any aid from members of the section. Hence this paper contains the entire result of its labor.

There seems to be a concerted general movement and desire to elevate the art and science of dentistry by means of education, and to raise it from the creditable position which it has acquired during the last decade to a still more exalted plane; the many occurrences tending to bring about this result are worthy of notice. The number of schools devoted to the special education of dentists has increased from twenty-four to twenty-eight during the past year. From twenty-five of these schools there have been graduated since the last meeting of this Association 597 students. There are but three schools in this country which will graduate students who have attended less than two full courses of lectures. In Germany dental education is under the control and direction of the General Government, and therefore all of the legal dental colleges are the departments of thoroughly equipped universities. In France there are as yet no restrictions as to the qualification of practitioners; however, the spirit of education is there. In Switzerland there is a dental school at Geneva, and for admission to practice special course examinations prevail. In Cuba the dental colleges and academies furnish poor and imperfect education. The institutions are turned into miserly establishments,

conducted for pecuniary interests; the dentists composing the board of examiners for the island are pecuniarily interested in the schools. The colleges in the United States are now more thoroughly equipped for the education of dentists than in the past. It is safe to assert that a school from whose interests the monetary question is entirely eliminated is in a better position to do the most good as an educator. A uniformity, as near as practicable, of the fees charged students by the various dental colleges ought to be secured by the National Association of Dental Faculties, and all advertisements of colleges, designed to secure patronage, should be discouraged. The effect of advertising resorted to by dental colleges devoted to the education of students can not be otherwise than demoralizing, especially when the advertisements resorted to are of such a nature as to be entirely discountenanced individually by the gentlemen occupying chairs in those schools. Dental societies and clinics are important factors as educators. The practice of educating dentists by pupilage under the care of preceptors should be discouraged, unless they are in charge of persons who are teachers as well as dentists. The section would cordially approve the adoption of some means of educating children in the public schools throughout the land on subjects pertaining to dentistry.

In France more attention has been paid to the education of school children in the preservation of their teeth than in any other country.

Intimately kindred to the subject of dental education is the recent action of the representative body of medical men in this country, who unanimously adopted a resolution admitting the D.D.S. or D.M.D. to the same rights and privileges of their association as the M.D. Whether we as dentists agree with the spirit of that resolution or not, no one will venture to gainsay that a recognition of that character is worthy and elevating. While as a profession embracing dentistry and composed of dentists we may be proud of the position we occupied, we entertain the belief that dentistry with the most perfect system of education can never rise to the rank of a profound cardinal profession unless it does so as a branch of or specialty of the healing art.

In conclusion Section II. begs leave to suggest, as one of the essential means to advance the interests of the education of dent-



ists and dental science in general, that an international dental congress be convened at an early day, and that this association take preliminary steps toward the consummation of that object.

## PART II.

### DENTAL LITERATURE.

The essayist mentioned the numerous additions to periodical literature in France, Germany, Switzerland and the United States, together with the recent publication of revised editions of standard works, and new books, not the least of which is Dr. Black's "Study of the Histological Characters of the Periosteum and Peridental Membrane."

## PART III.

### DENTAL NOMENCLATURE.

In this highly important subject the section is compelled to report no progress during the past year. We do not believe that any comprehensive report on this subject can be made until it has been considered by an international dental congress. Our present nomenclature fails to convey in a sufficiently lucid anatomico-physiological manner the difference of diagnosis between pulpitis partialis and pulpitis partialis purulenta or the distinction between periodontitis acuta apicalis and periodontitis acuta diffusa, together with numerous other diseased conditions, which are described by others in various terms. Numerous other points are still in chaotic confusion, and it is sincerely hoped that steps may soon be taken to arrive at some methodical arrangement.

(TO BE CONTINUED.)

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## SOUTHERN DENTAL ASSOCIATION.

TUESDAY, AUGUST 30, 1887.

Morning Session.

The President W. W. H. Thackston in the chair. Prayer by Rev. O. E. Herrick.

In the absence of Gov. Fitzhugh Lee the President briefly addressed the Association in a few fitting words which evoked loud applause.

Dr. J. H. Prewitt of Kentucky responded to the welcome of the Virginia Dental Association, under whose auspices the Southern Dental Association was convened. Dr. V. E. Turner of

Raleigh, North Carolina, welcomed the visitors on behalf of the Southern Dental Association. The addresses of Drs. Prewitt and Turner were closely followed by the audience, and every hit was vociferously applauded. The President then delivered his annual address, in which he reviewed the history of dental education in the United States and the rise of dental societies.

Afternoon Session.

Dr. J. Taft was invited to a seat beside the President, when he briefly thanked the Association for the honor and cordially invited the members to attend the Dental and Oral Section of the International Medical Congress. Dr. Morgan was also presented to the Association. Dr. Geo. H. Torney, of the U. S. Army, was invited to a seat on the platform. Dr. Sjöberg of Stockholm, Sweden, was accorded the privileges of the floor. All the visitors from northern states were invited to participate in the discussions. Thirty new members were admitted by unanimous vote. A committee, consisting of J. B. Hodgkin, J. R. Knapp and R. R. Freeman was appointed to draft resolutions on the death of Dr. J. R. Walker of New Orleans. Several of the standing committees were called, but not being ready to report, they were passed. Adjourned.

WEDNESDAY MORNING, AUGUST 31.

Dr. A. E. Baldwin of Chicago read a paper on Immediate Root Filling, in which he laid great stress on securing perfect dryness of the root canals. He does not believe in the introduction of new remedies, but advises that fewer will accomplish the same result. Dr. Catching asked the essayist why he used 95 per cent. carbolic acid?

At this point Dr. M. C. Marshall, of Little Rock, Arkansas, read a paper on "Conservatism in the Selection of Filling Materials."

Dr. Geo. H. Winkler, of Georgia, speaking to the subject of immediate root-filling, thought dryness was the prime factor to produce success. When the pulp is exposed he opens the chamber and drives a wooden point into the canal and thus removes the pulp. He uses iodoform paste, made by rubbing it up in creosote. He has not practiced immediate root-filling, but prefers to treat for some time; uses lead and wooden points dipped in

gutta-percha. Dr. Story, of Dallas, Texas, does not agree with the essayist or the previous speaker. All roots are not straight, and he does not use gutta-percha, but uses oxychloride of zinc as a root-filling. When he fills roots at once, he perforates the alveolar process; does not use drills in the roots of teeth.

Dr. Noel, of Tennessee, does not think absolute dryness can be secured in all cases, as the dentine will continually weep out moisture.

Dr. C. E. Kells, Jr., does not believe that moisture can get into a root when gutta-percha is in the root; recommends the use of orange-wood carbolized and oxychloride of zinc; would not think gutta percha would suit him; does not treat roots previous to filling; believes that the stronger carbolic acid should be used in preference to creosote.

Dr. J. R. Knapp has failures in root-filling; does not think wooden points will answer a majority of cases for root-filling. Wood is not adaptable to the shape of many canals. No one material will answer all cases, but a wise discrimination is necessary.

Dr. Winkler does not use gold in filling roots.

(Dr. Younger was then introduced.)

Dr. W. H. Morgan complimented the essayist on his paper and said that a misuse of terms had been made as he illustrated by telling a story. The trouble from pulpless teeth is the result of putrefactive decomposition. Germs must have fluids to exist; prevent decomposition, and there is no trouble. In the beginning remove all sources of infection. He enlarges root canals and thereby removes septic matter. If we can dessicate the roots and the contained matter, this will obviate cutting. It will also prevent discoloration after perfect root-filling. Does not agree with the essayist in his choice of a filling-material. All fluids introduced as root-fillings are liable to cause a disturbance. Nature gets rid of foreign matter in three ways: Absorption, ejection and encysting. Does not agree with the authors of a recent monograph (*The Management of Pulpless Teeth*). He thinks an antiseptic preferable to a disinfectant. What is the object of disinfection when all decomposed matter is removed? Does not see how tubuli can be filled (here Dr. Baldwin stated that he sealed the ends of the tubuli with gutta-percha). Does not believe that

putrefaction can take place without germs or microbes. Agrees with Dr. H. Knapp and others in this, although he has not investigated for himself. Denies that dentine tubes can be hermetically sealed.

Dr. Eubank of Birmingham asked if Dr. Morgan destroyed all pulps? He replied that he did not.

Dr. T. T. Moore does not believe in drilling out roots. He inquired of Dr. Winkler how much pain was produced in driving pegs into pulps? Dr. Winkler replied that there was no pain.

Dr. Richards applies arsenic to a pulp for four hours, and frequently removes at once and fills the roots with a paste of iodoform and 95 per cent. of carbolic acid. Does not ream out roots.

Dr. Sjöberg of Sweden said he wished to speak of a slightly inflamed pulp. Dr. Witzel applies arsenic to the pulp and after one day removes the coronal portion of it and a slight bleeding ensues which he arrests with a styptic. He then makes a ball of oxide of zinc and some antiseptic and presses it into a platinum cup which he applies to the ends of the root canals and fills the cavity at once. This is Witzel's operation. He believes in complete disinfection of instruments and putrescent teeth.

Dr. H. J. McKellops: He believes that all men do not succeed in every case. We still have something to learn. Theory is very fine, but practice is the sure test. Does suppuration take place in the tooth or at the apex? He reported a case of the maltreatment of an abscessed tooth. He thinks that many methods of root-filling are inefficient.

Dr. Beach, referring to the destruction of the pulp, does not believe that a pulp should be allowed to remain after its death, but should be removed at once. You do not have separation without suppuration. He prefers to "round" the roots of teeth and uses lead for filling roots with the points as furnished by the dealers. He drives the points in and through the roots.

Dr. George Evans said he would exhibit the next day an instrument for drying roots.

Dr. McKellops said he wished to call the attention of members to gold broaches for removing the pulp.

Dr. A. Eubank uses chloroform to dry roots, as it combines with water.

Dr. C. S. Stockton said, from listening to the discussion he



found very little new had been advanced. Believes that there is little pain from "knocking" out the pulps of teeth with a wooden point. Does not believe in immediate root-filling in the presence of danger.

Dr. Allport thanked the Association for courtesy extended and also complimented the essayist by saying that all his work was thoroughly done. Referring to the subject under discussion he said the pulp must be removed and the animal matter sterilized to insure success. Hot air is not enough when projected from a syringe; the root should be dried with a heated instrument, after which  $H_2O_2$  should be used, the root redried and purified. An abscess is never produced in the tooth, but beyond the apex of the root. Seal the end of the root and it prevents discoloration of the tooth. Does not think gutta-percha the ideal root-filling. Uses oxychloride of zinc for filling roots, working it in with a wooden point, and afterwards uses a gold broach to work the material into all interstices, leaving the gold in place.

Dr. McKellops asked how Dr. Allport dried a root canal? He replied that he used Woolley's root-dryer.

Dr. Morgan said he had seen such an instrument forty-one years ago.

Dr. G. F. S. Wright asked, if septic matter came down, how it came up? He said Dr. Winkler did not tell how to remove it.

Dr. Catching dips his instruments in alcohol to prevent gutta-percha from sticking to them.

Dr. Baldwin thanked the Association for the complimentary way in which his paper had been treated. Said in some particulars he had been misunderstood. He does not remove the pulps of teeth at once, because the line of demarcation, as is well understood in surgery, is not set up for from eight to ten days.

Dr. R. R. Freeman said, lead was one of the best root-filling materials in use. Does not use arsenic for destroying pulps.

Dr. Winkler asked Dr. Freeman what he used in the place of arsenic? He replied that he nursed a pulp, and if it did not recover it died when he filled the root.

#### AFTERNOON SESSION.

Dr. Geo. S. Staples, of Sherman, Texas, read a paper on "The Failure of Fillings."

Dr. T. H. Paramore, of Virginia, read a paper on "Capping Exposed Pulp with Sterilized Sponge."

Dr. Stockton asked how the sponge was prepared? Dr. Paramore replied that the sponge was cleansed and soaked in a 1-500 solution of bichloride. The rubber dam is applied. The hands, instruments and everything being thoroughly sterilized. The cap is placed in position and covered with oxyphosphate.

Dr. G. H. Winkler read a paper on "Soft Gold Foil."

Dr. W. H. Morgan said that the old-time amalgams were better than those of the present. He stated that the blacker the amalgam the better, and he noted few improvements. Is there any better filling material than gold? He reports gold as the best material for filling. Decay recurs beneath cement fillings in the same way that it does under other substances. The filling leaks. Dr. Morgan is using soft gold even now, but more than forty years have elapsed since he began using it. Cohesive gold is better, and is a more stable form of gold. It requires more tact and skill to fill with cohesive gold than with soft gold foil.

Dr. McKellops asked the difference between cohesive and soft gold foil. Dr. Morgan said it was ammonia or something else.

Dr. McKellops: Then it is not pure gold?

Dr. Morgan: It is not clean!

(At this point Dr. J. Taft spoke of the dental section of the International Medical Congress, particularly on the financial status. He asked for contributions and extended a cordial invitation to all gentlemen to be present in Washington, September 5.)

Dr. Winkler uses all forms of gold, but he would not discard soft gold when it was indicated for filling teeth.

Dr. Staples defended the proposition that men should have a natural fitness for entrance into a profession.

Dr. Story believed that a diploma did not always certify to the fitness of a man to practice dentistry. Many would be failures in spite of all culture. Has always been unsuccessful in capping pulps, but believes he will try Dr. Paramore's new method with the sponge graft.

Dr. Marshall asked Dr. Morgan if an amalgam filling which remained bright was not as useful as a darker one. Dr. Morgan replied that it was not, if it discolored the structure of the tooth.

Dr. Beach: If you want to be successful use all forms of gold and a wise eclecticicism.

(Dr. J. B. Hodgkin of Washington at this juncture read a paper on amalgam.)

## EXHIBITIONS AND CLINICS.

Wednesday, August 31.

Dr. B. S. Byrnes of Memphis, Tennessee, exhibited an engine plugger, which is arranged so that the point may be detached instantly by pressing on a button; when the finger is raised, the blows proceed with regularity. It may be attached to any engine. Dr. Parr of New York demonstrated the use of his universal separator. We noticed for the first time in several years an Elliott suspension engine on exhibition. We believe that many dentists would do well to take up with this old-style engine again, as it can be run by water or an electric motor, which will be a great convenience to dentists where water-power alone is not sufficient. Dr. D. B. Freeman of Chicago gave a practical demonstration of the uses of his labial clamps. The Detroit motor was in practical use, as was also the Shaw engine. Dr. H. A. Parr crowned two central incisor roots. He prepared them, adjusted the crowns and filled the roots at one sitting. Dr. George Evans of New York adjusted a gold crown for Mr. E. Kearsing, the root having been treated and filled at a previous date. Dr. C. E. Kells, Jr., of New Orleans, exhibited his electrical apparatus, showing an electric chip-blower (heated) and numerous other time-savers by using electricity, including an electric fan and a water-heater. He does not use any battery, but takes the electricity direct from the system in the city where he practices. Dr. A. A. Dillehay of Meridian, Mississippi, exhibited a pair of forceps notched in the beaks which appear on casual examination to possess decided merit.

## EXHIBITIONS AND CLINICS.

Thursday, September 1.

Dr. D. B. Freeman filled a labial cavity, using his new double-loop clamp. Dr. Baldwin filled a bicuspid root with gutta percha. Dr. Genese illustrated a method of taking impressions. Dr. J. R. Knapp gave a demonstration of the use of his blow pipe and an exhibition of crown and bridge work. Dr. Winkler filled a central incisor, using soft gold, and the plugging forceps to condense it.

Dr. J. J. R. Patrick adjusted a crown which was stamped and fitted from beginning to finish at one sitting. Dr. Morey, of New York, exhibited his separator and drills. Dr. Byrnes, of Memphis, filled a bicuspid tooth, using his new engine mallet. Dr. Geo. S. Staples filled a labial cavity in an incisor, using a wire ligature to hold the gum from the orifice. Dr. W. N. Morrison filled a root, using gold wire surrounded with oxychloride. Dr. R. W. Morgan filled a labial cavity, using hand mallet and Dr. Freeman's clamp. Dr. E. D. Frost filled a tooth with cohesive gold and Dr. W. J. Younger, of California, implanted a right superior bicuspid tooth.

The visiting dentists then went on an excursion to Norfolk, Va., visiting the Navy Yard and other points of interest.

The clinics were largely attended and the greatest interest was manifested from beginning to finish.

#### EVENING SESSION—THURSDAY.

Dr. E. P. Beadles read a paper on Dentistry; the Old and the New.

Dr. Winkler said he could not allow a statement made yesterday to go unchallenged, which was that ammonia rendered gold non-cohesive. The fumes of sulphurous acid gas, or dirt, or grease, or a small percentage of silver will do the same thing.

Dr. Morgan said that ammonia would render gold non-cohesive. He said this was the opinion of one of our best metallurgists. Six per cent. of silver would not destroy the cohesive property of gold.

Dr. Morgan asked Dr. Patrick if ammonia would prevent cohesion of gold? He replied yes, or any other foreign substance.

Dr. McKellops asked Dr. Winkler if he used non-cohesive gold in his operation to-day? He replied that he burnished the last layers of the gold on the surface of filling.

Dr. Campbell said Dr. Winkler used non-cohesive gold in filling the tooth at the clinic to-day.

Dr. Steel made a few remarks on the subject.

Dr. Morgan said he would demonstrate on Friday that ammonia would destroy the cohesive property of gold.

Dr. Story said tincture of iodine would render non-cohesive gold cohesive, by dipping it and then driving it off by heat.



Dr. Hunt made a few remarks on Nomenclature. At this point several gentleman spoke on various forms of gold and the misuse of terms, etc. [A deplorable lack of knowledge of the elements of chemistry and metallurgy was strikingly illustrated by several gentlemen during the discussion.]

Mechanical Dentistry was given the cold shoulder as usual.

Dr. W. D. Dunlap read a paper on "Dental Hygiene; The Proper Study of the People."

Dr. R. F. Hunt spoke on the subject of Dental Hygiene, saying that the title was not comprehensive enough, as the cleansing and care of the teeth did not constitute his understanding of hygiene in its broadest sense. Proper food, exercise, fresh air and all the accessories were as essential as cleanliness of the teeth.

Dr. Beadles asked Dr. Hunt if it was the province of the dentist to prescribe for expectant mothers? He replied, certainly.

Dr. Morrison said a simple diet and regular habits from early infancy was all essential in the development of the teeth. Hard food was also essential.

Dr. Story said Texans and Kentuckians were noted for their fine teeth and physical forms, due to the minerals in the waters drank. The Texans however lost their teeth from early loosening of the teeth, due to deposits of calculus.

Dr. Morgan said any food that was eaten contained more than enough lime salts for our needs. He then spoke of the comparative richness of various materials, used as foods, in mineral salts.

Dr. Gingrich thought that if we emulated the habits of the Esquimaux we would return to barbarism.

Dr. Crawford said he approached the question of Dental Hygiene with diffidence. When we consider that some 22,000,000 people are under twenty-one years of age its importance is seen. Hygiene and prophylaxis meant more than the saving of teeth, as it warded off more pernicious and destructive diseases. If we would understand its importance we would improve the teeth of thousands yet unborn. If we entered into prophylaxy and hygiene with the same enthusiasm that we did into mechanics we would be more useful as dentists. He appealed to the members to take up the subject and study it with intelligence and have the patience to master it.

Dr. Hunt spoke at length but nothing new was offered.

Dr. Hodgkin said he kept his eyes open, but had no statistics or oratory, but he believed in the survival of the fittest. If we had the proper stamp, our teeth would last a lifetime, if not they would be lost.

Dr. Atkinson: If we understood the sweet angel who spoke before me we would understand the stamp which is placed upon human beings in the distant past. Man when separated from the parent stem is in a condition to be fed. Primarily, the teeth are needed for mastication. If we lived in a state of nature, the food we eat would properly cleanse our teeth.

Three Aphorisms.

Crystallization is the physiology of the mineral kingdom.

Corpusculation is the physiology of the animal kingdom.

Cellulation is the physiology of the vegetable kingdom.

—*Atkinson.*

Here followed an Atkinsonian discourse on all the 'ologies.

Dr. Friedrichs illustrated by a few remarks the idea that an impression or stamp was placed on every one which resulted in the red-headed, the black ditto, etc.

#### CLINICS AND EXHIBITIONS.

Friday, September 2.

Dr. W. H. Gingrich filled a mesial cavity in a right superior bicuspid with soft gold foil, using hand pressure.

Dr. W. J. Younger implanted a lower incisor tooth in the mouth of one of the regular soldiers from the fort.

Dr. Parr adjusted two central incisor crowns, filling the roots with wooden points. A plate had been worn over the roots for some years.

Dr. A. G. Bouton filled a tooth with amalgam which is unusual, as most clinicians generally deem it beneath their dignity to clinic with such a base material.

Dr. George Evans made and fitted a gold crown for one of the soldiers from Fortress Monroe. This operation was completed in about one hour from beginning to finish.

Dr. T. S. Waters, by deed of gift, presented to the association his invention of removable bridge work so that all could use the method without let or hindrance.

Dr. J. B. Hodgkin, from a memorial committee, reported on

the death of Dr. J. R. Walker with resolutions of respect to his memory, which were adopted unanimously.

A conference committee was appointed to meet the representatives of the American Dental Association, composed of J. Rollo Knapp, V. E. Turner, E. S. Chisholm, Geo. H. Winkler and John C. Story. After consultation with the officers of the A. D. A. present the committee reported as follows :

“ The committee appointed to confer with the officers of the American Dental Association, looking to the holding of a union meeting next year, respectfully recommend :

“ *First*—That the invitation of the American Dental Association to hold a meeting for social and scientific purposes be accepted.

“ *Second*—The two committees agree to recommend that Louisville, Ky., be the place and the fourth Tuesday in August the date for the holding of such union meeting.

“ *Third*—That all details of arrangements for the consummation of this object be placed in the hands of the officers of the associations, with power to act.”

This was adopted.

Drs. L. D. Shepard, W. C. Wardlaw, T. S. Waters, A. W. Harlan and W. W. Walker of the local committee of arrangements of the American Dental Association were present to extend the invitation of the Association to the Southern, and they acted on behalf of the officers of the American Dental Association.

Dr. James Leslie then read a paper detailing his claims to being the discoverer of the cohesive property of gold in 1839.

Mrs. J. R. Walker made a few remarks on Dental Hygiene in her own family.

Dr. McKellops, from the committee on volunteer essays, presented a paper from the late Dr. J. R. Walker on The Future of Dentistry—A Prophecy, which was read by title.

Dr. W. D. Dunlap read a recommendation from the Alabama Dental Association on The Employment of a Dentist to Teach Dental Hygiene to the Public. Action on this was deferred until the next meeting.

Dr. Richards made some remarks on the Appointment of Dentists to the Army and Navy of the United States to care for the

teeth of the common Soldier and Seaman. He stated that dentists would not interfere in the least with the duties of surgeons in the army or navy.

Dr. W. C. Wardlaw read a paper on Neuralgia.

Dr. J. J. R. Patrick gave a talk on Irregularities which was illustrated by a gigantic model of an upper set of teeth. These teeth were so placed in their artificial sockets that they could be twisted out of position. Dr. Patrick's regulating appliance was placed upon the teeth and the method of correcting the deformity was shown as practiced by him at home. He then gave a lecture on the Causes of Dental Deformity, illustrating his remarks by large drawings which accurately depicted the bones of the head and face, including drawings of the models of many forms of irregularity of the teeth.

Dr. Atkinson stated that exuviation of teeth was a physiological process, which was a return of the tissues to an embryonic condition.

Dr. Patrick said he used the term exuviation instead of absorption or exfoliation.

Dr. Atkinson asked what became of the melted limesalts of the roots of deciduous teeth if it was not by absorption? Here a controversy arose between Drs. Patrick and Atkinson on the use of terms which was edifying to the members but not easily reported.

The Association then proceeded to the election of officers for the ensuing year, with the following result :

President, B. H. Catching, Ga.; First Vice President, J. H. Prewitt, Ky.; Second Vice President, W. N. Morrison, Mo.; Third Vice President, J. H. Moore, Va.; Corresponding Secretary, J. Y. Crawford, Tenn.; Recording Secretary, L. P. Dotterer, S. C.; Treasurer, H. A. Lowrance, Ga.; Executive Committee, C. G. Edwards, B. Oscar Doyle, Wm. McL. Dancey.

(TO BE CONTINUED.)



## ILLINOIS STATE DENTAL SOCIETY.

TWENTY-THIRD ANNUAL MEETING, JACKSONVILLE, ILL., MAY, 1887.

*(Continued from Page 562.)*

## MICRO-ORGANISMS. \*

BY G. V. BLACK, M. D., D. D. S.

## FIRST DAY.

MR. PRESIDENT:—I have been somewhat doubtful as to the course I should pursue in presenting this subject again this year. As you remember, I talked about it a good deal last year. It was a question whether I should take up particular plants, explain them and exhibit their peculiarities of growth, or whether I should again take up the primary ideas and illustrate the method of cultivating microbes. I have decided on the latter, but shall give special attention to the methods of separating by plate cultures and growing in gelatine. Last year I confined myself to broth cultures.

It is difficult, perhaps, to gather the ideas connected with this subject. The subject is young and new. Although it has been in progress ever since the discovery of the yeast plant in 1838, it is still new. New, largely on account of its difficulty, and on account of the ideas that antagonized it in the beginning and still antagonize it, on account of the ideas that seem to have grown up with men and have become a part of their nature, almost a part of their manner of thought. Many of these ideas have to be destroyed slowly, and I may say as I look over the subject, and the difficulties that surround it, it is with some surprise that I see it making the progress it has. Experimentation on this subject has been confined to the laboratories of a few persons, and until recently the laboratories of a very few in a foreign country. We have depended upon them for our knowledge of it. So far as we have believed in this subject we have depended upon their assertions, not what they have shown us but what they have told us.

If I take a piece of meat and lay it out in summer weather like this, you say it will spoil. I say no, that is not correct. If

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\* These lectures were given, one each day of the meeting, the demonstrations being made from a culture apparatus which had been set up for the purpose.

I take a bottle of ordinary beef broth and expose it in weather like this you say the broth will spoil. I say no, it will not. So I might go on with the whole catalogue of substances regarded as unstable, the general idea is that they spoil. I say no, *they are spoiled by something*. The broth has in itself no power to change. The meat has in itself no power to change. If it is let alone it will be meat to the end of time. It is, in every case, spoiled by something foreign to itself, by something that does not belong to it, by something that has entered into it and has power over the chemical affinities of its elements.

There is no such thing as a chemical change inaugurating itself. This is one idea that I wish you to understand in the very beginning of this work. The chemical force is a self-satisfying force, and the results of chemical action bring stability. A salt once formed remains a salt so long as it is let alone. An acid and an alkali form a salt when brought together, but remember that word *brought*. They have no power to bring themselves together; and when the salt is formed it remains a salt so long as it is let alone.

Now, we have this world made up of material with certain chemical affinities, sixty or seventy different elements, each having a special affinity for other elements. This affinity acts only when the elements are brought in contact. None of them have any power to bring themselves in contact with other elements in order that these affinities may act. We have great mountains built up of various chemical compounds of these elements and these are stable compounds so long as they are let alone.

What are the disturbing elements? Winds, rains, electricity, heat, or changes of temperature and light. Various forces come in to disturb chemical relations. Among these we have life as the great disturbing force. What life is we have not yet determined. We cannot determine what electricity is. We say light is a certain form of motion. Perhaps life is a motion. This force of life is different from others. It is a specific form of the manifestations of force. It is different from other forces in this, it brings elements together and seems to control their combination. It takes control of them and handles the chemical forces for its purposes. Here is a dog. It is capable of going about and gathering its food hither and yon, bring these elements to-

gether for its own special uses, as can every other animal. The horse and cow bring the materials together for their own uses. The plant does the same thing. We do not see it so well. It sends its roots into the earth, and its leaves into the air and brings together material for its own uses, and so presents element to element that the chemical affinities do its bidding, thus controlling the formation of chemical compounds and their conversions, to satisfy its life. The dog suddenly falls down and dies, it is no longer a dog, it is a carcass. But the material which is built into that carcass remains, the chemical forms remain, and if it is undisturbed will remain until the end of time, the carcass of a dog. If no other life enters there, or other effective disturbing force, it will remain to the end of time the carcass of a dog. The point is this. We say that this broth spoils. No, it is spoiled. Every time we find it changed, we find a growth in the broth. There are no changes of a chemical nature taking place under what we call spoiling in which we cannot find living things growing. They are always present. For instance, here is a broth which has been exposed to a temperature of 98 degrees for a week. It is as pure and perfect as when placed in the tube, no growth there, hence no change in the broth, and whenever we get change we get a growth. Here is another tube which we may say "is spoiled" in the sense that it has been decomposed. Certain plants are growing it. Dr. Wasall is at fault for the spoiling of this tube of broth, as it was planted from his mouth Sunday evening, simply by a wire passed back on to the base of his tongue, after having previously been brought to a glowing heat and passed into the tube. (Exhibiting a tube about one-fourth full of a whitish deposit.) This growth is the result. That plant has lived upon the elements of the broth. It has converted the elements of the broth into the chemical forms satisfactory to the life of the plant, and then thrown them aside again as waste products. The chemical qualities of the broth have been changed, hence we say the broth is spoiled, a bad term to apply to it, for in this case there has been no bad smelling product whatever.

Now this brings me to a better mode of explanation. We take food into our stomach, it is digested, converted into other chemical forms. This is what we mean by digestion. Then it is absorbed, and nutrition occurs—that is, it is converted into the

chemical form of tissue. Then de-nutrition occurs, it is converted into waste products, another chemical form, and the waste products are thrown out. Hence, we have four essential factors: digestion, nutrition, de-nutrition and reproduction, in a definite line of forms. Every form of life presents these, from the greatest to the least. Hence, we have this plant digesting broth, converting it into its own tissues, nutrition; throwing off the waste product, de-nutrition, and the perpetuation of its own form. Therefore, we have the broth broken up.

Now to return to the carcass of the dog. Plants begin to grow in the flesh of the dead dog, they appropriate the chemical elements, convert them into chemical forms suitable to their own life, and throw them out as waste products. Other plants enter into those waste products and convert them into the chemical forms suitable to *their* life, throw them out again as waste products and so on, going from the higher to the simpler forms continuously as a rule. That is what we know as rotting—decaying. In all cases it is the work of these plants.

At the last meeting of this Association, I showed you especially broth cultures, and the modes of isolating these plants one from another by broth cultures. I wish now to show you the plants by gelatine culture. I have a little difficulty now on account of the extreme heat. I have prepared my gelatines to work at 85 degrees Fahr., supposing we would not have hotter weather than this, but my thermometer is now standing at 88 and I do not know how much higher it will get, but last night I made some gelatines that will stand at 90 and I hope the weather will not get much warmer than that. A good many of my tubes have been ruined. I have, however, some twenty-five varieties of these plants growing in gelatine in good shape for observation. In gelatine cultures it is best that the plants grow in a gelatine that is just as near the point of softening as we can have it, not to be softened. Hence, I have tried to work close to the line of temperature. We are very liable to these freaks of the weather when we depend upon it for the gelatine growths.

Our growths may be first planted into broth tubes and transferred to gelatine plates, or they may be placed in gelatine directly. We take one of the tubes of gelatine, warm it sufficiently to render it fluid, and inoculate it with the plant, whatever it



may be, and the cotton stopper is replaced; then the contents are shaken until the microbes are thoroughly distributed through it and separated from each other as evenly as possible. Now having the plate sterilized (passed through the fire) pour the gelatine with its microbes on the plate, spread in a thin sheet and let it set. Then we place it in an apparatus like this, a jar or bell glass inverted over a rack which has shelves, each shelf covered with a piece of blotting paper which has been saturated in a solution of corrosive sublimate, and the mouth of the jar sealed with a solution of corrosive sublimate. We place the plates on those shelves to develop. After a day or two we will have colonies developed upon the plate. By this means we isolate the individual cells of the fungus from each other and each cell develops a colony from itself. Then we pick these colonies out one by one, transfer them to our broth tube, or tube of gelatine and get a pure growth, a single kind of plant growing, no weeds among them. We are much bothered with weeds in this kind of gardening the same as in any other kind of gardens. Then we may transfer the plants to any substance that we may like for examining and testing their peculiarities. I have here a growth of Miller's brick-dust microbe on gelatine. You see the reddish yellow color of the plant.

Now I want to make a few plants in broth, and you will see to-morrow the results. Then I want to carry those plants to gelatine plates and allow them to develop, and take them off and put them into tubes. My object is to familiarize you as much as possible with this work, so that when you read an account of this mode of planting you will know what these processes are; and that you may know what the author means when he says he has carried a plant through such and such a process and has found such and such results.

The doctor makes five plants from mouths of individuals present.

#### SECOND DAY.

I will first call your attention to the plants I made yesterday. You will remember that the broth in which I made the plants was clear. The remaining tubes, not planted, are still clear. In these five tubes are the plants. Here is one that seems to be mostly *Streptococcus Continuus*. It was taken from under a rubber

plate. Before I pass that by, I wish to refer to the subject of sore mouth under rubber plates. What change occurred in that broth? (Testing with litmus) you see it has become very acid. Where a plate is left in the mouth without being kept well cleaned, we find an immense amount of the streptococci growing under the plate and the fluids will become as acid as it is possible for them to be and the plant live. The acid increases until the growth of the plant is stopped by the acidity, just as the life of a man goes out if he does not eliminate his urea. This acid makes the mouth sore if it is continued from day to day for any length of time. And as these things cling to rubber plates more tenaciously than to metal plates, as they are more difficult to keep clean, we have more danger of sore mouth under rubber plates, but otherwise than that I contend there is no difference. We might go through the various tubes that have been planted and we will find every one of them acid. It is not only caries fungus that produces acidity, but we have a number of plants in the mouth that are acid formers. All of the different kinds of streptococci that grow habitually in the mouth produces acidity of the fluids in which they grow.

I want to show you how the gelatine plates are planted. I can do more by showing you how these things are done, than by talking about individual micro-organisms. We take a glass plate, sterilize it by passing it through the fire until we destroy everything. Then we lay it on a frame wrong side up. Here I have a tube of gelatine that I have put into the isothermal case heating it up to 100 degrees in order to render it fluid. The same gelatine at 80 is stiff. I will plant this tube. The tube is stopped with cotton the same as the broth tube. In order to prevent evaporation and thus prevent the gelatine from becoming too stiff, we tie a piece of rubber dam over the top of the tube. (Removing the rubber cover.) I take my platinum wire and bring it to a red heat. In planting we use a platinum wire and every time we use it we bring it to a glow in order that it may be sterile,—so that we may have nothing living upon it that may be transferred. It is true that we may catch something in the atmosphere. In planting I will take tube number five which you will remember was planted from the under side of a gold plate. We never find a mouth so clean that we will not get a growth. I

will make this plant, transferring a little drop, that will be held in the little loop at the end of this wire, from the one tube to the other. We want to distribute these organisms which we have transferred as thoroughly as we can. We shake it, roll it, etc., to distribute the micro-organisms as equally as possible through the gelatine. Now we will take another tube of gelatine that has been warmed. We will transfer in the same way a drop to it from the tube just planted, first bringing this platinum wire to a glow, because it has had a chance to get something from the air. We do not expect to be very successful in getting pure cultures in a room like this. If we expose a dozen of these tubes for ten minutes we will be apt to get a growth in almost every one of them. You will notice that I handle this cotton stopper carefully, in such a way as not to touch the lower end with my fingers at any time. Why do I make two transfers? In the first tube, notwithstanding the small amount of material transferred to it, the micro-organisms are so plentiful that, if I should pour it out onto a plate, the colonies would develop so close together that I could not pick out one without danger of touching another. It is often necessary to make three of these dilutions in order to get them sufficiently distributed. (Planting the second tube.) Now I will shake this one up in the same way so as to distribute them through the gelatine. I pour a drop out on this plate. I spread it over the plate so as to thin it out, and I pass it under this jar onto one of the shelves. You will suppose that in taking out that drop from this tube of broth and conveying it to a second tube containing gelatine, and then taking out a drop from that second tube and conveying it to a third, also of gelatine, that I will have them very well distributed. But I was just looking at some plates I planted the other day in precisely the same way and I found that I had so many organisms in the third tube, that the colonies were so close together and covered those plates so completely, that there were only some thin edges where I could possibly pick out individual colonies. It is often the case that we make four of these dilutions. There is some danger of contaminating these plates when handling them in the air, but if so, we can see and recognize any weeds that get on them. There are quite a number of micro-organisms floating in the air here that are great pests in cultivating. The various yeasts, and the moulds, are

quite abundant in the atmosphere, and these give us a good deal of trouble, but we soon learn to know them by sight, just as the man hoeing the garden knows the weeds he wants to get rid of.

Suppose this blackboard is a blank plate. (Illustrating.) The micro-organisms are so small that they will not be seen with a half-inch lens, but by to-morrow spots will begin to form in the gelatine. They will be of various colors, various forms. Many of them will be round circles which will have a dark border, and within the circle we will see a few little strings, something like that, the streptococci. The staphylococci, the pus-forming organism, we will find much the same, a round colony, but the whole of it will be filled, packed closely, with minute, round cocci, and it will have a yellowish color by transmitted light, a whitish color by reflected light. The whole plate will be spotted over with these circles, colonies of various kinds. The effect of this is to liquify the gelatine immediately about the growing plants, and it will look like globules of water had been dropped on or within the gelatine, rather than anything else, with just a few streptococci, or densely packed with staphylococci, or if it is one of the gelatine-forming cocci it will be very transparent, with just a few little spots in it, but generally they are almost entirely transparent, looking like a drop of oil in water. The appearance of the colony is made by the change that has taken place in the gelatine, as well as by the mass of organisms. We have as many varieties of these colonies as we have varieties of micro-organisms. We are not able to judge of the varieties of these micro-organisms by the microscope alone. We may have two that grow and look alike under the microscope, and yet when we come to try them in tissue, or in gelatine, will find they are totally different. They produce different results, or different effects.

The doctor here illustrates by picking off the colonies from the plates under the microscope, and transferring them to tubes for obtaining pure growths. And also exhibits a variety of pure growths on gelatine.

#### THIRD DAY.

I have been a little puzzled to know what I had best do, there is so much to be done and so little time to do it. I think I had best run over very briefly a few of the individual plants.



Yesterday you remember that I took one of the gelatine plates which I had planted a day or two ago from a common boil and picked off some colonies before you. This growth is the result of one of these, and I find it to be the streptococcus pyogenes, or the pus-forming streptococcus, the plant we usually find in these boils. I cannot show you a fully developed gelatine growth of this plant on account of the melting down of some of my gelatines. I wish to call your attention to the mode of growth of the cocci, particularly those we find in the mouth, and we find pretty nearly all the morphological varieties there that we find anywhere. We pass about our streets and in the country here and there. The saliva is a very excellent culture medium for micro-organisms generally. We take in the air containing the spores. They light in the secretions, hence we may expect that pretty nearly all the micro-organisms found in the air, that will grow in liquid media, will be found now and then in the saliva. I made cultures here, and these weeds bothered me. I made cultures in Rock Island, a different class of weeds bothered me there. I made cultures in St. Paul, and there I found strangers. I made cultures in Chicago, and found still others. From this you will understand that it is necessary in studying this subject that we divide the visitors from the residents. That is to say, there are certain micro-organisms that we find almost continually in the human mouth, some that do no harm, so far as we know, others that do damage. The others are not found in the mouth so continuously, it is not their native place, the soil is not the best for them. They grow for a little while and are pushed out just as certain trees not indigenous to the soil will fail. It is to the cocci of the mouth, and those that do damage, that I want to call your attention. By the word *coccus* we mean a little ball, a little sphere. The morphological differences that we find in these cocci exist mostly in their modes of growth. You may take the sheet cocci, the staphylococci, the streptococci, and mix them together, and in the stale cultivations you cannot tell one from the other. But these plants each have a peculiar fashion of growing. This will represent the single coccus, a point. (Illustrating.) In explaining the forms of growth of these cocci we go from a point to a line, from a line to a surface, from a surface to a solid. A point extended in one direction forms a line, ex-

tension in two directions forms a superfice, extension in three directions forms a solid. Some of the cocci grow in such a way as to form a line. They multiply by segmentation, one cell divides forming two, always in one direction, forming a rope, or chain, *streptococcus*. Another divides in two directions, one divides into four, and continuing this they form a sheet. These usually form a film or sheet on the surface of gelatine or broth. This is the sheet coccus, and where you find that coccus described you will understand what is meant, a coccus forming sheets or films. We have another variety in which they multiply in three directions, forming a solid, those I have called the cumuli; but some recent authors have described them as packet cocci, forming a packet or solid mass. None of these are bound together by gummy material, and after their growth is completed they fall apart. Others produce a gummy material. They may be any of these forms of growth, but they develop themselves into a gelatinous material which they form. We have another and very important variety which departs from this mode of development, the staphylococcus. The tendency is to divide in the form of the streptococcus, in a direct line, but every third or fourth cell divides into three instead of two, hence we will find them branching off, and the result is a bunch, like a grape bunch, hence the term *staphylococcus*. We have a large group of this style of growth. In order to know morphologically what we have, we must see it growing and thereby get the form of the growth, otherwise our observation is not at all reliable. Most of these cocci fall apart when the growth has ceased, or, as we say, when the cultivation has become stale, and then they all look so much alike that an expert may easily be deceived as to what variety they belong. We have one quite important organism growing in the mouth of the yeast form. It is not properly yeast, but it is claimed that under some peculiar conditions it will produce alcohol. This grows in the form of the ordinary yeast, except that the cells are only about one-fourth as large and are round. This we find in the mouths of children occasionally, in certain forms of sore mouth, and in the disease that some of the old ladies call *thrash*. I do not know that it does any particular damage in the adult. It grows by budding.

Here I have two specimens of the staphylococci (exhibiting

some tube growths), the staphylococcus albus and the staphylococcus aureus. You will see but little difference in the color at a distance, but when it is near you, you will see that one is distinctly yellow. This is the coccus that we find most frequently growing in open wounds where we have pus, wounds that have been exposed to the air. We have no pus without some of these forms of micro-organism. As you see this gelatine broken down and liquified (exhibiting a tube), so the plastic products of inflammation are broken down and liquified by these forms of staphylococci. Here is a broth tube with a growth of staphylococcus albus. Instead of falling down in twenty-four hours and the fluid becoming perfectly clear, as this one with the caries fungus (exhibiting several tube growths), the fluid will be milky for five or six days.

Next I will take up the caries fungus. I will pass around various tubes containing it. I do not think I need to talk much about this fungus. In broth it falls down into the bottom of the tube after about twenty-four hours, and generally the liquid is very clear. If we examine this liquid by test paper we find it is very acid. (Illustrating with litmus.) It is lactic acid that we have here. This plant is so well understood that I think I need not dwell upon it. Here are a number of cocci that probably we will find in the future are really more important than is now supposed. They are diplococci. One of them produces acid quite strongly, and I have found it in carious dentine so often that I suspect it of being a mischief maker. Here is an opal that we find about the front part of the mouth, a very nice plant. We cannot tell it by microscopical examination, however, from the caries fungus, but the tube growth is very different. It has the peculiarity of coloring the broth in which it grows a beautiful opal, which the caries fungus does not. It is a streptococcus like the caries fungus. Here we have the sordes coccus. It has this peculiarity: it grows best at 103 or 105 degrees, and in case of fever it seems to take the whole of the mouth. It forms gelatinous masses at this temperature that cover the mouth, tongue and lips, forming the sordes that we have in fever, and in that respect it is quite an important plant. (Taking masses of gelatine from the broth growths and exhibiting them.) In healthy per-

sons we find this coccus mostly about the base of the tongue and in the back part of the mouth.

The doctor passes among the members specimens of the different varieties and explains their differences.

#### FOURTH DAY.

I think it is hardly fitting that I should undertake to talk now. The meeting is virtually closed, and it certainly is too late to undertake any farther discussion of this subject. I have only presented a few thoughts connected with it. The subject is too large to be presented at all completely if I occupied all of your time. I have presented here for your examination something over fifty tubes containing pure gelatine cultures of about twenty-five different species of microbes. I have attempted to show you in a hurried manner the plan by which these are cultivated. I have no anticipation of being able to describe each one of these in detail, and have not attempted, except in the most brief way, to do so. I have not even mentioned all of them. There is scarcely time to give any notice of each individual plant. My idea in bringing this subject before you this year, and last year, has been to familiarize you, as much as the time will allow, with the modes of gathering, the modes of planting, the modes of separating and growing these various microbes. I have not expected to give you information as to the special physiology of each plant, but you can, by seeing the plants and the modes of growing them, be able, I think, to read works on this subject with more intelligence and with more thoughtfulness as to what the books contain.

This is all I could expect. Of the streptococci of the mouth I have in my tubes, which you have had opportunity to examine, the continuosum, the caries fungus or streptococcus media, streptococcus parvus, the two diplococci, the opal, azure, and sordescocci. All of these are found habitually in the mouth. I have separated all from the saliva. Then the other cocci that are instrumental in the formation of pus, we have the staphylococcus pyogenes aureus and the staphylococcus pyogenes albus. I want to say a word in regard to places in which we find these latter. I have found them in a very large percentage of the examinations of the saliva, where I have made close separations of



the different kinds of fungi. In some cases I will not find them at all in the mouth, but a very large percentage of persons show these pus-forming organisms in the month. *Streptococcus pyogenes* I have not found in the mouth so often. The first I mentioned, the white and yellow staphylococci are the cocci we find oftenest in the pus of open wounds. *Streptococcus pyogenes* we find more in the special inflammatory conditions as well as in pus. They seem to be poisonous, while the staphylococci are not especially poisonous. These latter, I find frequently in the mouth, and I find them in scrapings from the skin and cleanings from the finger nails. We occasionally find them in dust from the atmosphere and in various other places.

Of the packet cocci or cumuli there are three kinds. Those that I have termed the cumulus minor and the cumulus major are found continually in the mouth, and are probably innocent. At least I have injected them into wounds in the guinea pig without any effect. There is one other that I have not studied completely that is found in the mouth less often. It is of the same form but behaves differently. The chrome cocci, those producing coloring matter, are found in the mouth only occasionally. Dr. Miller seems to have found one variety. I have found two varieties. These are staphylococci. But little is known of them as yet, so far as inoculating animals is concerned. Of the diplococci I find the same two varieties that Dr. Miller describes. These seem to have been confounded with the caries fungus in his first papers, but they have been described correctly in the papers which he has given us later. They are very much alike. We cannot tell one from the other by the microscope, but we can tell the colonies from each other on the gelatine plates. Their colonies are slightly different, so that the varieties can be picked out.

The bacilli found in the mouth so often seem to be of little importance. There are a good many of them, and they are much alike, and the same bacilli are found very constantly in the atmosphere, so I do not regard them as of very much importance.

The *leptothrix buccallis* is quite an important plant, and is found in the mouth all the time. The fact that it does not grow on the ordinary gelatines, has prevented its being cultivated heretofore, and this tube is a rarity. (Showing a gelatine tube

with a large whitish growth.) This is the leptotrix buccallis, and is an immense growth of it and will give some illustrations of what it will do in the mouth. I had intended to talk to-day especially of the gelatine forming cocci, but it is hardly worth while to undertake that. They are illustrated here in the tubes and that is perhaps the best I can do.

#### THE CHEMICAL PHILOSOPHY OF REMEDY.

Activity in bacteriology and advances in chemistry suggested that there is a chemical philosophy in remedy. Doubtless germs are active in altering, by fermentation, the normal organic constituents of the blood into noxious ones not infrequently fatal (Jaksch, 1887): "To assist in clearing the system of this life-activity or aid in rapidly removing these effete bodies constitute the aim of remedy: so that *remedy* might be defined as the use of means to restore the body to healthy condition by prophylaxis—repair of injury and the correction of nutrition."

The success of antiseptic surgery shows the effects of the application of this principle to diseased conditions. "Germs contain albumen: so if subjected to the physical effects of vacuum, freezing, boiling, or incineration, suffer or perish. Chemically, they succumb to the use of mineral acids, alkalis, certain salts, and organic radicals: "In a word, the deprivation of oxygen, either directly by oxidation of another substance capable of attracting and retaining it, by the loss of hydrogen, by the subtraction or substitution of elemental or approximate radicals. Consequently we can *exclude*, *arrest development*, or totally *destroy* the bacteria." The ptomaines engendered by bacteria are divided into several classes, and upon subsequent elemental analysis show that they contain certain homologues of organic radicals (Cornil and Babes). The application of disinfectants suggested antiseptics, and leads us to anticipate their modified use in internal medicine.

Clinical experience shows that remedies, although often empirically selected, are those containing efficient oxidizers active appropriators of hydrogen, or by substitution of radicals succeed in destroying the pernicious products of germs, its spores, or the consequences of its mere existence in the vial fluid.

The paper was illustrated by diagrams and charts.

From report in *Medical Record* of International Medical Congress.

Those who are in the habit of indulging in raw onions, says a medical exchange, may be consoled for the social disadvantages which ensue by the fact that onions are about the best nervine known. No medicine is really so efficacious in cases of nervous prostration, and they tone up a worn out system in a very short time. Their absorbent powers are also most valuable, especially in times of epidemic. It has been repeatedly observed that an onion patch in the immediate vicinity of a house acts as a shield against the pestilence, which is very apt to pass over the inmates of that house. Sliced onions in a sick room absorb all the germs and prevent contagion. During an epidemic the confirmed onion eater should, however, eschew his usual diet, as the germs of the disease are present in the onion and contagion can easily result. Sanitas fluid used as a mouth wash will completely destroy the odor of onions and tobacco.

# THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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EDITOR: A. W. HARLAN, M.D., D.D.S.

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## CLEANING TEETH.

Salivary calculus and stains on the teeth, at times, when the mouth is opened, will disgust the beholder, and frequently prevents the formation of a favorable opinion of the person, who is so neglectful of his appearance. Such disfigurements are more noticeable in the mouths of women and girls than in men, on account of the absence of a beard, which often conceals the teeth of men. Nothing adds so much to personal appearance as a clean set of teeth. How necessary it is, then, that dentists should, as examples to their patients, have clean teeth. Many, however, are unmindful of the fact that cleanliness begins at the fountain head. Teaching and preaching has little effect on a careless patient unless the dentist can exhibit spotless ivories. All of the preceding is only a prelude to a few remarks on the operative procedures relative to cleansing a set of teeth for a patient. The teeth of many people, from neglect, are found more or less disfigured by salivary deposits and stains. The gums are detached at the necks, ragged on the edges and bleed easily. Pus may ooze on pressure from between the teeth and gums. Now if a patient has from twenty-six to thirty-two teeth, all more or less covered by deposits and agglutinated mucus, food, etc., it is improbable that a dentist, be he ever so expert, could properly remove *all* extraneous matter and thoroughly cleanse a set of teeth in one sitting, even of two or three hours duration. Our own practice is to syringe the mouth with tepid water, generally adding thirty or forty drops of a ten per cent. solution of resorcin to four ounces of water. The deposits are then removed from

every tooth, beginning with the third molar, coming forward to the central incisor. This is done both above and below. The deposits are all removed with a pushing motion, save in a few instances, where it is possible by the pulling movement to detach the concretion without tearing or wounding the gingival margin of the gum. It will be found, by a little practice, that this is the most effective method of operating, supposing that properly shaped instruments are used. It also saves time, produces less laceration of the gums and by consequence less interference in operating on account of the slight loss of blood. All stains are then removed from the teeth by the use of wooden, felt, moose-hide, leather or rubber points. These should be charged with levigated pumice, powdered Arkansas stone, oxide of tin and finely prepared chalk. During the whole cleaning process the only water used in the mouth of the patient should be injected from the syringe, as it is more efficient and saves time, and the jet of water more certainly removes the fine fragments of calculus and grains of powder than ordinary rinsing with water from a goblet. Fine brushes, which are revolved by the engine, are useful in the polishing process after the calculus has been removed. *Avoid the use of mineral acids in any form for cleaning teeth.*

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#### DENTAL SOCIETIES.

Beginning with October, the fall and winter work of the various local dental societies will begin in earnest, and something like twenty-five or thirty dental colleges will open their doors to the thirsty aspirants for knowledge, to be turned out in due time as full-fledged doctors of dental surgery, *not* many of whom will be eligible for membership in the American Medical Association.

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#### OUR EXCHANGES.

"Honor to whom honor is due" is a good motto for an editor's office, and if some of our esteemed contemporaries will only follow such a rule, nothing but good results can ensue. Three clippings from the REVIEW appeared in a recent issue of the *British Journal of Dental Science* under the heading "Editorial."



We know that shears are an indispensable adjunct to the office, but "editorials," as we understand the term, are not evolved with such instruments. We have also noticed that articles reprinted in another journal without due credit to the proper source have again been copied into other journals and no notice taken of the exchange note. Such methods show a laxity of business qualifications that is absolutely deplorable.

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#### JOINT MEETING.

By the recent action of the American Dental Association and the Southern Dental Association these bodies will hold a union meeting in the city of Louisville, Kentucky, on the fourth Tuesday in August, 1888. These organizations are the largest and strongest in the United States, and we look forward with considerable interest to their coming together for "social and scientific purposes." Louisville is a central point, which will probably accommodate a larger number of dentists than any other place midway between the East, West, North and South. Hotels and Halls are ample, and the Falls City has many attractions which some of our Louisville neighbors will no doubt expatiate upon in a future number of the **REVIEW**.

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#### ON THE MISERY OF LISTENING TO LONG-WINDED PAPERS.

At the recent meeting of the Ninth International Medical Congress, Section of Dental and Oral Surgery, Dr. R. J. Porre, of Cincinnati, read a paper entitled "Pyæmia from Dental Origin." This paper was a compilation of the simplest dental lesions known to occur in the practice of a dental surgeon of very limited experience. The paper was long drawn out by verbose and unnecessary details of cases treated, without any attempt to define chronic pyæmia or illustrating a respectable knowledge of pathology or recent advances in the microbian theory of suppuration. The paper was listened to perforce, but we are sure we voice the sentiments of many of the listeners when we say that it was devoid of scientific value, and was crudely put together, and built on a structure of assumption of an acquaintance with pathological conditions, which the paper itself did not disclose.

## NINTH INTERNATIONAL MEDICAL CONGRESS.

The Ninth International Medical Congress was opened in Washington, D. C., Monday, September 5, 1887, by Hon. Grover Cleveland, President of the United States, at 11 a. m. Nathan S. Davis, M.D., LL.D., was elected President. Dr. John B. Hamilton, Secretary-General, then read the names of the Vice-Presidents and officers of sections and a report of the work done in organizing the Congress. The Hon. Thomas F. Bayard then delivered an address of welcome, which was responded to by Drs. L. LeFort of Paris, P. G. Unna of Hamburg, M. Semmola of Naples, C. Reyher, of Russia, and Deputy Surgeon-General Martin of the British Navy. The chairman of the local committee of arrangements then read his report, giving a list of the entertainments to be given during the week; after which the President delivered his address, which was frequently applauded. After tendering him a vote of thanks the Congress adjourned until Tuesday at 10 a. m., when addresses were delivered by Profs. Austin Flint of New York and P. G. Unna of Hamburg, Germany. The Opera House was packed from pit to dome, about 3,500 ladies and members being present. Many distinguished people were on the platform, including Hon. J. G. Carlisle of Kentucky. When the President of the United States rose to speak, the whole audience rose to their feet and loudly manifested their pleasure in being permitted to see the chief ruler of the republic and hear him declare the Congress formally opened.

The address of welcome of Secretary Bayard was a model of eloquence, short, and highly appreciated by every one present at the opening of the International Congress. The characteristic wind-up of "Come in" was enthusiastically received.

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APOLOGETIC.

Readers of the REVIEW will notice for the fourth time the pages of the journal have been increased from 56 to 64, in order to present matter which would have grown old before its appearance in the succeeding issue. Several communications of interest will have to lie over one month for lack of space.

## DOMESTIC CORRESPONDENCE.

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USES OF CHLORO—PERCHA.

2624 Washington Av., St. Louis, }  
Mo., September 3, 1887. }

*Editor of the Dental Review :*

SIR:—Referring to your mention of Dr. Swasey's use of chloro-percha, and his method of preventing evaporation, I cannot help asking him to discard the *inverted* corked bottle for an Ingersoll *glass covered* bottle, the joint secured by a coating of glycerine. It is perfection in every sense.

There are many pat uses to which chloro-percha can be put, which I am satisfied the profession do not recognize, to wit:—For securing arsenical applications in or upon shallow surfaces, for instantly sealing accidental punctures of rubber dam in situ, a small piece of punk dipped in chloro-percha and laid on the defect; for covering plastic fillings during the hardening process, and many other uses which suggest themselves to a bright, practical mind. Glycerine also has many useful qualities for coating cavities and approaches to root canals, which are to be filled with chloro-percha (the latter will not stick on a surface previously covered with glycerine). For covering all glass stoppers to prevent sticking, for coating (with only a trace,) instruments used in working the plastics, used upon burnishers and stones, in place of oil, etc., etc.

Yours very truly,

G. A. BOWMAN.

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FOREIGN CORRESPONDENCE.

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LETTER FROM LONDON, ENGLAND.

*To the Editor of the Dental Review :*

In the REVIEW of July 15th I see that Dr. Mullett mentions a method of capping pulps that I have used for upwards of ten years with a great degree of success, viz.: that of using a thin piece of quill, reducing to the requisite thickness by scraping on the *inside*, thereby securing the resistance afforded by the integ-

urity of the horny surface of the outside, then trimming it to suit the shape of the cavity.

When practicing in Ohio I found capping pulps could be carried on to decided advantage, especially with young patients, as compared with devitalization of the pulp,—with which operation malarial influence proved quite a disturbing element in the subsequent treatment of said teeth.

My method of capping the pulp is as follows: Supposing it to be a recent exposure and all pain subsided from contact with the air, this end is best secured in my hands by the application of equal parts of carbolic acid and oil of cloves, which coagulates the lymph upon the surface and produces a practically dry eschar, which, whether it is absorbed or not, I have never found to cause any subsequent trouble.

I commence my fillings as ordinarily—take for instance a good sized approximal cavity in a bicuspid—having filled along the cervical margin, and brought the filling to within a line of the exposure, I paint a film of Sandarac varnish around the edge of the quill on the concave side then carry it to place with a suitable excavator, gently insinuating it by a slight sliding motion under the last piece of gold introduced, not having condensed it against the tooth, so it will readily admit of the application of the quill as described; then seeing that the exposure is perfectly protected, I proceed as in a simple cavity. I endeavor when possible to allow the quill to have a margin of about a line or a little less beyond the centre of exposure, so as to secure a bearing for the cap on solid tooth structure.

I expect some exceptions will be taken to this method from the fact that the quill does not fit down perfectly to the pulp thereby leaving a space to be filled with any exudate from the pulp that there may possibly be proliferated, in its endeavors to repair the injury it has received. I believe that herein lies the success of this method; only some two or three cases do I remember where the pulps have died under this treatment, and in those cases I have reason to believe the teeth had caused pain prior to the case presenting itself for treatment.

The reason that most of the systems of capping is a failure, is because there is almost invariably pressure produced upon the pulps.



All plastics afford a splendid opportunity of promoting this state of affairs. This is clearly demonstrated by the lively interest taken by the patient in the operation when plastics are used, then again, their irritating and escharotic properties are entirely too severe to allow them to be placed in contact with a recently exposed and healthy pulp.

All things considered, I think the quill capping in the hands of a skillful operator affords the greatest opportunity for success. Try it!

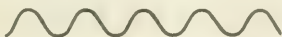
W. MITCHELL, D. D. S.

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LONDON LETTER No. 2.

*To the Editor of the Dental Review:*

DEAR SIR:—The best method I have found for expanding the inferior maxilla as required in regulation cases, is the following: I think its chief merit lies in its simplicity, and ease of construction. Having secured a model of the lower jaw, I take piano wire of a suitable size and after leaving about an inch straight on the end I bend it with a pair of clasp benders, so it forms what looks very much like a lot of U's joined together, thus



The length of the curves is determined by the length of the teeth and depth of the gum; after the wire is convoluted, adapt it to the arch, wax up the caps over the molars and bicuspid, leaving the cuspids and incisors perfectly clear, flatten the ends of the wire or bend it as taste may indicate and insert in the wax and it is ready for the flask. Before investing see that the wire does not approach either teeth or gums closer than a sixteenth of an inch, or when it is stretched to produce expansion it will press upon the soft tissues and cause much pain. I find this kind of a case does not interfere with the speech as much as others do, and the rapidity with which it performs its work is quite equal to the Coffin plate.

W. MITCHELL, D. D. S.



Dr. Thackston said "Dentistry made itself without the aid of other and kindred professions."

Dr. A. E. Brown, of Chicago, was at the Hygeia Hotel during the session of the Southern.

We had the pleasure of greeting Mr. Chas. H. Cowman of Baltimore at Old Point Comfort.

Dr. H. A. Lowrance, of Athens, Ga., has been treasurer of the Southern Dental Association since 1872.

There were representatives from Maine, Texas, the Great Northwest, Florida and all intervening states.

Dr. Louis Ottogy has been dangerously sick from malarial fever, but we are glad to note his convalescence.

J. J. Wedgwood, M. D., D. D. S., London, England, was at the meeting of the Southern Dental Association.

Dr. C. R. E. Koch has been appointed a member of the State Board of Dental Examiners by Governor Oglesby.

The Virginia State Dental Association was the first State society organized, the date being December 12, 1842.

We had the pleasure of greeting Mr. W. Bowman McLeod of Edinburgh, Scotland, at the Southern meeting.

Dr. Morgan scouts the idea that dentists "are born, not made," in which sentiment we fully agree with him.

"Dot" or L. P. Dotterer, D. D. S., of South Carolina, is the efficient secretary of the Southern Dental Association.

Drs. M. Stout and Wm. Taft presented a beautiful picture from the Hygeia as they gaily disported in the surf at Old Point.

We have used Dr. D. B. Freeman's new gingival clamps, and are much pleased with them. They are very serviceable.

Letters recently received from the United States of Colombia, S. A., speak favorably of the condition of dentistry in that country.

Drs. T. J. Thomas, Paris, France, C. P. Pruyn, A. E. Baldwin, A. E. Brown and D. B. Freeman joined the Southern at Old Point Comfort.

Dr. L. J. Mitchell, Delaware, Ohio, has returned from his European trip and is now "putting in his best licks" again. He reports a grand time.

The Dealers and Manufacturers turned out in full force at Old Point Comfort. From Listerine to the S. S. W. D. M. Co. you could count many others.

Dr. Storey said he had never seen a tooth filled with soft gold which would not have been better filled if cohesive gold had been used. [Applause.]

One of the speakers at the Southern said that the trouble with some dentists was that they filled the roots so d—d tight that this was the occasion of after trouble.

The crystals of Hydronaphthol used on an exposed pulp will allay pain as quickly as any of the essential oils, and makes a far pleasanter dressing than Iodoform.

Dr. P. J. Kester will fill the chair of Dental Surgery at the College of Physicians and Surgeons of Chicago, during the absence of Dr. A. W. Harlan, in the ensuing winter.

Some of our contemporaries still persist in saying that "Dr. J. B. Brutus, M.D.," read a paper, etc. Good taste would leave off the title at one end of the name or the other.

Dr. Geo. H. Cushing has accepted the professorship of principles and practice of dental surgery, in the Chicago College of Dental Surgery, and will lecture during the ensuing winter.

From the last annual report of the Wisconsin State Board of Dental Examiners we glean that at present 372 persons are registered and qualified to practice dentistry in that state.

Dental schools and departments of medical colleges and universities have multiplied with a rapidity unparalleled and by some it is thought that there are now too many. [Thackston].

Since the organization of the Dental Department of the Northwestern University at Chicago, Illinois leads the states in the number of dental colleges within its borders, having no less than four.

Dr. Morgan stated that he could do with cohesive foil what no man could do with soft gold foil. He does not depreciate the value of soft gold foil, but its use is limited and cohesive is universally useful.

For the information of dentists who have not read the decision of the court, in the bridge and crown cases recently decided by the United States Courts, we will state that the crown patents were not sustained.

Slight errors are liable to creep in anywhere. One of our worthy teutonic exchanges mentions a patent granted to "John Joseph Ravenscroft Patrick, in Belleville, County of Dane, State of Wisconsin, V. S. A."

The *Dental Register*, in printing resolutions of "thanks" to Drs. Davis and Allport, made "establishment" read "abolishment," which is a little *too* near the truth. The paragraph as printed is irresistibly funny.

The sum of \$1,000 was placed at the disposal of the Executive Committee of the American Dental Association at the late meeting, to be used in an emergency in case of patent litigation threatening the interests of the profession.

Dr. Baldwin does not believe that micro-organisms are necessary to pus formation in all cases. In this he takes issue with Dr. Black. He cited the formation of pus in felons and synovial inflammations to illustrate the point.



Dr. H. E. Beach, of Clarksville, Tenn., says that after the death of a pulp by the use of arsenic, there can be no separation of the dead tissue from the living, without suppuration, which is untenable, as we will proceed to show at a later date.

According to Dr. Turner, dentists do not enter the American Medical Association as physicians or surgeons, but as specialists of medicine. This view while ingenious does not fit the case. Specialists in medicine are in the first instance doctors.

The State examination in Germany for the obtaining of license to practice in that country, was passed in Berlin by twenty-one, in Breslau by seven, in Halle by seven, and at other places by five, making a total of forty-one for the winter term of 1886-7.

August 12, 1887.

Dear Sir:—I saw your Advertisement in ——— catalogue. I am at the dental business. I want your Catalogue. address ———, Broome Co., Kentucky.

Dr. Winkler opposed the lavish voting of thanks for papers read, in which he showed his good sense. Duty well performed fills the worker with a sense of the value of it. Societies will do well to dispense with extending "thanks" to everybody.

Dr. W. W. H. Thackston, the presiding officer of the Southern, is as straight as an arrow, in spite of his nearly three score years and ten. His eye is as bright and his grasp as firm as the youngest of us, and he bids fair to prolong his period of usefulness for many years.

Dr. Garrett Newkirk places his used rubber dam in an envelope with patient's name written thereon. The same envelope can be used again and again till there is no further space for a name. This is a very neat method and will commend itself to all dentists. Try it!

*The Medical Register* of Philadelphia issued a daily edition during the week of the holding of the Ninth International Medical Congress. Every section was reported in very creditable shape and the thanks of the members are due the editors, Drs. J. V. Shoemaker and W. C. Wile, for their enterprise and untiring labors.

When using oil to prevent the adherence of oxyphosphates to the instrument, one should be cautious not to permit the oil to touch the cement anywhere except on its outer surface or on parts which will be removed in polishing, as otherwise wherever oil has penetrated within the filling, the latter will flake and result in its failure.

NORTHERN ILLINOIS DENTAL SOCIETY.—The next meeting of the Northern Illinois Dental Society will be held in Elgin, Ill., the second Wednesday in October, 1887. We have not received the programme, but an interesting meeting is promised. Let every one who can do so go to Elgin and take part in the proceedings.

A Russian dentist recommends  $2\frac{1}{2}$  grains of gum mastic (globules) and 1 grain of paraffine to be molten together and made into sticks, for fastening broken plaster teeth or models. The stick should be softened and some of it put on both of

the surfaces to be cemented, when both parts are warmed and held together. The models should be dry.

The special train which left Chicago September 3d, for Washington, carried 146 passengers, of whom 24 were dentists. Late Sunday afternoon resolutions of thanks for courtesies extended by the railroad company, and special resolutions thanking Dr. Frank H. Gardiner for his untiring efforts to make the party comfortable, were unanimously adopted.

Dr. Winkler uses *plugging* forceps for condensing soft gold in labial, buccal and many proximal cavities. He also uses the same forceps for condensing gold in the teeth of children, by allowing the force of the masseters to be applied in the proper direction. The teeth are pressed upon a tin plate, and on the other side is affixed a plugging instrument which thoroughly condenses the gold.

FROM A YOUNG LADY READER OF THE DENTAL REVIEW.—The following quotation is from Will Carleton's poem known as "Gone with a Handsomer Man."

"But one thing's settled with me—to appreciate heaven well,  
'Tis good for a man to have some fifteen minutes of hell."

Hoping this will be of some service to you, I remain as ever MAUD R.

[This should have appeared in Dr. Cattell's paper last month, but it was not received in time.—Ed.]

The Virginia Dental Association elected as President, Dr. W. W. H. Thackston, of Farmville; First Vice President, T. H. Parramore, of Hampton; Second Vice President, L. M. Cowardin, of Richmond; Third Vice President, J. W. Forman, of Norfolk; Corresponding Secretary, J. Hall Moore, of Richmond; Secretary, Geo. F. Keesee, of Richmond; Treasurer, J. F. Thompson, of Fredericksburg.

For the first time in the history of the American Dental Association every section presented a report in regular order, at the late meeting at Niagara Falls. In view of the uncertainty which was felt concerning the holding of the meeting and the lack of early selection of the place of meeting, by the officers, this was a very creditable showing. We hope that the good example of the sections will be followed at the next annual meeting at Louisville, Ky.

Dr. Parramore, who proposes to utilize the sponge as a pulp capping, uses no dressing in the cavity, but the 1-500 sublimate solution. He waits until the bleeding or oozing has ceased, then washing the cavity with the above, applies the sponge direct to the pulp and covers with oxyphosphate and dismisses the patient. He has had six months' experience with this method. He suggested the use of sterilized sponge at the apex of a root, not having tried it himself.

We had the pleasure of being piloted around the Monumental City a short time ago by Drs. R. B. Winder, M. W. Foster and T. S. Waters. In turn we inspected the Johns Hopkins University, the Peabody Institute and Library, Academy of Music, Baltimore City College, Jockey Club, the Parks and other places of interest and only regretted that we were compelled by pressing duties to turn our face towards the west, firmly impressed with the sentiment that this is a "great country." Foster!

VIRGEN, Ill., Aug. 9, 1887.

## EDITOR DENTAL REVIEW.

Dear Sir: Enclosed find the definition for TEETH as taught by a professor of one of our "city high schools" in Macoupin county:

"The teeth are the sclerotic appendages of the preassimilated portions of the alimentary canal, subservient to the prehension and trituration of the food, prior to the process of deglutition." Very respectfully, GEO. H. WESTLAKE.

The astute state editor C. of the *Archives* is hereby informed that the DENTAL REVIEW Co. is engaged in circulating its own publication from day to day, regardless of the fact that the A. M. A. has opened her arms to dentists. It is no evidence that the members of the dental profession are better qualified to practice medicine, because of the ease of entrance into medical societies, than they were before the "resolutions" were passed. No amount of resolving will convert dentists into medical men, or vice versa, without proper training and plenty of good hard study.

The Southern Dental Association met in the Pavilion at Old Point Comfort, Tuesday, Aug. 30. There were about 350 ladies and gentlemen at the opening session. We recognized the faces of many of the old veterans whose ranks are gradually being thinned by the remorseless hand of time. The address of Dr. Prewitt of Kentucky was both eloquent and sensible, and the speaker was frequently applauded for his historical allusions and the happiness of his similes. The audience was in a continual state of good humor and in thorough accord with the sentiments uttered.

The microscopical exhibition of Dr. R. R. Andrews, of Cambridge, Mass., given in the National Theatre, Washington, Wednesday afternoon, September 7th, was the most creditable, in point of interest from a scientific standpoint, that had been given up to that time. The speaker stated that all the slides had been prepared from material which he had cut and mounted himself, and that the whole process of photographing the specimens had been taken from nature without the intervention of any change mechanically or otherwise. The enlarged views were projected on the canvas so that all could see them.

The New England Dental Society will hold its Twenty-fifth Annual Meeting in Boston, on the 5th, 6th and 7th of October. This is the largest and oldest dental society in N. E. and next to the largest in the country. It is intended to make the meeting a celebration of our Silver Wedding. Many eminent men in our profession throughout the country have promised to attend and make the occasion successful. Your attendance and co-operation, either as an Essayist, Clinical Demonstrator or Debater, is earnestly requested. If you can, and will attend, and participate in any manner, please let me know at the earliest possible date. A complete programme of the meeting will be sent to all signifying their intention of attending, at a later date. Respectfully, A. M. DUDLEY, Sect'y.

Those fortunate or unfortunate to possess a large number of the little patients who are from two to five years of age, and who during the introduction of a filling are continually turning their heads in the wrong direction, may wisely profit by the experiences of a country photographer when taking the "phiz" of a baby on a cloudy day with a camera known as a forty-niner, requiring from five to seven

minutes exposure. There are any number of methods resorted to for holding the child in the same position. We have recently seen a dentist work with his foot, a string which passed through a pulley in the ceiling and had attached to it a jumping jack. It was so arranged that the child watched the movement of the jack (holding its head just in the right position) with such a steady determination that the filling was completed without the usual annoyances attending this operation.

#### DR. MARIANO SEMMOLA ON BACTERIOLOGY AND ITS THERAPEUTIC RELATIONS.

The object of medicine is to cure disease. To cure diseases we must know the causes that produce them. The external causes are visible and tangible, but to discover the internal, invisible causes is the aim of medical science. To solve this problem we must employ the true method of solving all problems—the experimental method. Doctors lost themselves in fantastic speculations before this method was known. The wonderful progress of physiology has been made in the light of experimental methods. When morbid conditions have been studied, instead of going on with the same careful and slow research, physicians wanted to hurry on, because they wished simply to cure the sick. To apply the experimental method and, at the same time, go fast is, in the nature of things, impossible. Thus it happened while physicians were making experiments in the laboratory, instead of having patience to master their studies, they came at once to a conclusion. New hypotheses had to be made, and without knowing it they began again the same errors that had characterized the medicine of an earlier day. New systems thus came into the field that were the opposite of the experimental method. If medicine is to progress and be a science, it must not leave the experimental method, otherwise there will be nothing but renovations of error and loss of time. The error of the day is bacteriology considered as the key to all pathology. Bacteriology should be studied, because it teaches what is in the microscopical world, of which we had never dreamed the existence—a world in which man lives, and which is filled with enemies of mankind. We drink millions of microbes in water, and respire millions in the air. Sometimes these microbes affect us—perhaps killing in a few hours. When we strive to cure the sick, we must proceed cautiously, because, before there has been a careful demonstration, if we attempt to deduce a remedy, there is danger of doing harm to the sick instead of curing them. This is the great harm modern bacteriology does. Doctors concluded at once that microbes were the cause of disease, whereas, in many cases, microbes are but effects of disease. We ought to reproduce the disease artificially by a microbe before concluding that it is the cause. The experiments made have not given any satisfactory results, except in carbuncle and tuberculosis. To conclude hastily that this or that microbe is the cause of any disease, is but to ignore or set aside the experimental method. The demonstration which the experimental method demands in this case would be complicated, because we would not only have to know that the microbe existed, but we would have to know what was the condition of the blood necessary to the culture of that particular microbe, and science tells us that, for the present, this is the problem we can not solve.—*Medical Record*.



# THE DENTAL REVIEW.

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## ORIGINAL COMMUNICATIONS.

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### THAT DEAD DOG.

BY G. V. BLACK, M. D., D. D. S.

Reply to Criticisms by the Editor of the "Ohio Dental Journal."

After returning from my summer wanderings, during the continuance of which it was "against the law" for me to look into a dental or medical journal, I, naturally enough, returned to the habits of my former (it may be partial) civilization and at once began a raid on the accumulated numbers. When I came upon the report of the Illinois State Dental Society meeting, in the June number of the "Ohio Dental Journal" and especially when I read the report of what I said about microbes, I was struck with its inaccuracy. As I read, my pencil went to work among the inaccuracies, and when I was through it was rather difficult to tell the original color of the paper. Certainly those two and a half pages must have staggered their readers. And then the supposed author of all this—how did he feel—well, he has grown gray, all the hair has fallen from the top of his head in the years gone by, and such trifles do not hurt as they used to do, or—well let that pass. I know something of the difficulty of making such a report and said to myself, "Well, that is simply a failure, that's all." But when I passed on to the August number, page 382, I suddenly found evidence in one of the editor's specials (which by the way I never fail to read) that the reporter had got hold of one sentence that 'set him at me.' Who ever saw a man who would not fight about a dog, and some will do so even after the dog is dead, especially if there is a cross-grained idea connected in some way not satisfactorily explained, with the death of the dog. And

then the carcass is liable to become offensive, which in this case adds to the difficulty.

I am glad to know that my friend, the Editor of the Ohio Journal, believes in microbes, and that the sentence which so distressed him was reported with sufficient accuracy for practical purposes, but with him I must repel the thought that the specialist is necessarily a man of one idea. I say "necessarily"—a man may be a specialist in practice if he chooses, but should never be a specialist in study or thought, for if he drops into that, to such an extent as to fail to keep pace with the ideas which are co-related, his specialty will be but poorly cared for, though he be ever so energetic. The miser who held the dollar between his eye and the moon and thus proved that the dollar was the larger, had but little idea of the real economic value of money, though it may have engaged all his thought and energy. Just so the man who gives his whole energy to the study of the chemical affinities, neglecting the co-relation of life as a modifier of the presentation of element to element for the exercise of these affinities in the never-ceasing changes in nature, might gain a larger idea of the moon in its present stable state than the miser, but would gain a very imperfect idea of this earth with its ceaseless changes. Indeed the moon is probably the best sample of what chemical affinity will do when left to itself or without the aid of life: a dead world, where even the chemical affinities lie locked in an embrace that knows no waking, an eternal sleep. Yes, "we are told that chemical action brings stability," and "that a salt once formed remains a salt as long as it is left alone" and my brother is right "that *is* a truism" (Ohio Journal, June, p. 333) and it should have its full weight as such. What is a salt? Well, many definitions might be given and none would satisfy all. It is a chemical combination of two or more substances. Usually, we may say, it is restricted to direct combinations of a definite acid with a definite base, or of two or more of each, but in the broader sense may be made to include a great variety of combinations. So far as our purposes are concerned it might be extended to all chemical combinations and the sentence quoted would still remain a truism.

In the next sentence, "It is not so clear that *light* stands alone as the pre-eminent force, etc.," my brother, the editor of the Ohio

Journal, has been led into error by his reporter. It should have read "life" instead of "light" and in that case I think his study of the moon would have prevented criticism.

But we are told that these things do not "spoil themselves." Of course not, they are as dead as salted mackerel or a quartz crystal, (*ibid*) says our editor. Well then, what is the trouble? Still he continues, "To 'spoil themselves' they require will-power and activity, but they are passive." "They 'are spoiled by something that does not belong to them.'" (*ibid*) That is good, and just what I taught at the meeting at Jacksonville, and so far I am glad to see my friend is on the right path. Not all of the laborers—the real thinking men of the world, have progressed so far. But here he goes off on the old chase after that "*fata morgana*, which shows us deceitful views" etc. (Liebig's Agricultural Chemistry) with this. "But are there no spoilers but microbes?" "The piece of meat was probably killed with a few red blood corpuscles in it. In these, during life, is stored oxygen in the passive state; and as it is held passive by vital force, it follows that as soon as life is extinct it is liberated in the active state. At once it acts on oxidizable matter, and the corpuscle is abundant in such material." Well, suppose we admit that all of this is true, what of it? Do we find the meat burned to ashes? Not at all. Yet all seem to agree that the heat of the body is maintained by the consumption of oxygen and the formation of carbonic acid and water. When the dog is killed it grows cold. Why? Because these chemical changes which are under the domination of life have ceased. Oxygen enters the lungs, and thence the blood, in which it is very loosely combined with the hæmoglobin of the blood corpuscle, and from thence passes to the tissues, for which it has a stronger affinity. Here it becomes intra-molecular, or combined with the molecule which combines the elements of the tissues. With the activities of these it is again delivered up as carbonic acid and water, waste products, still in a state of combination. This action of oxygen gives no promise that it is the element that destroys—spoils the tissues after death. (The reader is referred to any recent standard work on physiology. Read the articles on respiration, heat production and muscular motion.)

No, this is the ignis-fatuus, that many have followed in their

search for the power that 'spoils,' putrescible substances, and surely leads into the quagmire. Oxygen being regarded as an especially active element and almost omnipresent in its free state, in the air, has been made to bear all these sins for ages, all through lack of sufficiently close observation on the part of devotees of science. When Lussac crushed carefully cleaned grapes in the Torricellian vacuum and observed that the juice did not ferment until a small quantity of air was admitted, he came to the conclusion that oxygen was the cause, and though centuries have since elapsed, the world is only just now shaking itself out of that error. Lussac knew nothing of the spores that were admitted with the air. These were discovered by Schwan in 1838 and when he admitted air through bulbs containing sulphuric acid, or through heated tubes, either of which destroyed the spores, meats and meat infusions were not spoiled by oxygen.

Then Liebig perfected his wonderful molecular motion theory which has proved as great a stumbling block as the theory that oxygen spoils things. The influence of this theory which I may say was a pure invention brought forward in the earnest effort to explain that which seemed mysterious, and to controvert the germ theory, has been so great that I may be pardoned for quoting it from the original as it was written in 1840 by the great chemist, in his papers upon Agricultural Chemistry, written for the British Association for the Advancement of Science.

He says, (Agricultural Chemistry, Peterson, Philadelphia, 1847, p. 121) in speaking of the nature and action of poisons "when putrefying muscle or pus is placed upon a fresh wound it occasions disease and death. It is obvious that these substances communicate their own state of putrefaction to the *sound blood from which they were produced*, in exactly the same manner as gluten in a state of decay or putrefaction, causes a similar transformation (fermentation) in a solution of sugar." This, he says, is in accordance with the following law (*ibid*, p. 119): "*A molecule set in motion by any power can impart its own motion to another molecule with which it may be in contact.*" "This," he says, "is a law of dynamics, the operation of which is manifest in all cases in which the resistance (force, affinity or cohesion) opposed to the motion is not sufficient to overcome it." This is the law by which the great chemist sought to explain all decompositions,



fermentations and putrefactions. It was supposed that these molecular motions were in progress, and that by mere contact this motion was communicated to the molecules of any substance capable of undergoing a similar decomposition or fermentation, and this was the disturbing cause. He claimed that the heat of boiling water or acid which produced coagulation was sufficient to stop these motions, hence Schwann produced this effect in his heated tubes and acid bulbs and prevented his meats and soups from spoiling. It will be seen by this that Liebig was too astute an observer to hold that oxygen was the cause of the spoiling, even in that day, for Schwann's experiments effectually disproved it. But Liebig by his wonderful power as a writer held back the time of the acceptance of the germ theory of disease, and of the decomposition of things termed unstable for many years. Among other theories he held that these decompositions, this molecular motion, might be taking place in gaseous substances, hence, disease might be communicated, as evidently it often was, through the air. In 1854 Schroeder effectually destroyed this hypothesis by admitting air to sterilized soups after filtering it through sterilized cotton. Here the air was admitted without any change except the removal of floating particles (spores), and it was found that the soups and meats kept as well as when all oxygen and supposed putrescent gases were excluded, farther illustrating the fact that the keeping of the meats was not dependent upon any possible change in the *condition* of the oxygen as had been claimed by some chemists.

After this came the studies of Pasteur and his debates with Liebig, in which the great chemist was gradually driven from position to position until but little of his theory of molecular motion was left. This was accomplished largely by the gradual development, experimentally, of the fact that none of these decompositions could take place without the presence of micro-organisms, that they could be promptly started by their aid, and could not be started in their absence. And they uniformly obeyed certain well-known laws of life.

Now came the brilliant success of Sir Joseph Lister in the application of these ideas to surgery. But I should first speak of some of his experiments as bearing more directly on the case of our dead dog, and the blood globules contained in his carcass. He

tied the jugular vein of an ass in two places so as to confine a certain portion of blood between the ligatures, and at certain points within this space he introduced and confined certain tubes open at each end, but in their centers containing a bit of muslin, some of which were contaminated with certain micro-organisms in different quantities. This was for the purpose of determining the putrescent qualities of the blood in such a position. At the conclusion of the experiment he arrived at the opinion that it was especially difficult to produce putrescence of the blood, or rather that the blood resists "spoiling" much more strongly than milk and many other substances. He also found that blood drawn into bottles under conditions intended to exclude micro-organisms and maintained at the temperature of the body did not putrefy, and both the clot and the serum exuded from the clot, were peculiarly resistant to putrefaction. Hence, he came to the conclusion, which has been verified in practice, that a blood clot, if properly protected from micro-organisms, is a very good antiseptic dressing. (Proceedings of the World's Medical Congress, London, Vol. II, pp 371 to 373.) It has also been shown by Baumgarten (Quoted by N. Senn, Transactions of the American Surgical Association 1884, Vol. II, p. 237) that blood may be confined in the vessels between aseptic ligatures for weeks together and show no signs of "spoiling." Indeed, may be kept in the fluid condition. It has now become well known that thrombi and regions of infarction, which latter are regions of dead tissue impacted with dead blood, do not undergo putrefactive changes. They do not "spoil" so long as they are protected from microbes, though they contain multitudes of blood globules with their loosely held oxygen, all of which become as dead as the carcass of our poor dead dog.

Does this look like proving that "the matter of the carcass is chemically active and all of its particles are now" (that it is dead) "the playthings of affinity" (Ohio Journal, p. 384), and our editor explains, "Think too, of this force running riot in the improvement of its opportunities." His next sentence ought to have corrected his ideas, "Bear in mind that in the building up or the taking down of organic bodies, whether animal or vegetable, chemical laws are never violated." No, my friend, oxygen without the affinities of oxygen is not oxygen, and life does not

change these, either in the building or the taking down of organic bodies, life only controls the environment and the presentation of element to element. These elements act when they meet in accordance with their affinities which hold them stable in their union until a stronger affinity is presented. Therefore, when life departs, all becomes as still as the everlasting rocks of the moon, until a disturbing cause is presented to tear asunder their embrace.

Liebig was certainly one of the strongest men of this century, and I regard it as well, that the germ theory had so able an opponent, for it has required of it that every step be proven. I love to read Liebig's writings because of the close observation of facts, and his wonderful power of co-relating them. He was the conservative power of the scientific world at a time when the wonderful awakening activity on certain lines of thought and discovery were in danger of leading less conservative spirits into exaggerated conceptions of the import and value of their discoveries. Many of Liebig's conceptions, theories and laws in regard to the decompositions were undoubtedly opportune for the time, and checked a too hasty assumption of theories based upon partially developed facts. Much that he has said as to the action of oxygen after the cessation of life, the gist of which our editor has quoted, and, to which as it seems to me, he has given greater weight than Liebig himself ever intended, was evidently said in the effort to reconcile facts not then possible of explanation. All through his work may be seen the struggle with the conviction of the constancy of chemical affinity, and what seemed to be a change of this force when under the influence of life. We see the evidence of this in this sentence, quoted by the Editor of the Ohio Journal. "In vegetable and animal substances, the elements obey mechanical and chemical laws, *if their action be not removed by resistences.*" Here the portion of the sentence italicized is superfluous, and shows that the brilliant Liebig was not clear in his conceptions of the relations of life to the chemical affinities. In his own mind there was a great difficulty here which he failed to bridge over satisfactorily to himself and it crops out ever and anon in his work. He seems never to have gained a clear conception of the fact that life controls the environment of the affinities, the presentation of element to element,

not the affinities themselves, though many times he struggles up very close to this point.

It will be seen from a sentence which I have quoted in relation to the action of poisons (putrefying blood or pus) that Liebig's observation led him to the clear conviction that all of the decompositions, known as fermentation, putrefaction, etc., were of the same order, that though they might produce different results their mode of action was the same, and he formulated the law of molecular motion, which I have also quoted, as applicable to them. This idea had been imperfectly presented before, but now it was accepted as true by a very large portion of scientists and the only difficulty with it to-day is that it is *proven to be untrue*, in the fact established that all of these occur through the direct intervention of life in the form of microbes.

It is to this breaking down of these theories of the influence of oxygen and molecular motion first brought to the practicable test by Sir Joseph Lister, that the recent great advance in pathology and surgery are due. It is the broader views that have come with the knowledge gained of the habits and effects of microbes, that has made hospital surgery so much more successful than in former years, that has rendered abdominal surgery possible, and extended the range of conservative surgery in every direction. Even those who do not accept the facts developed, and these are becoming fewer, have modified their practices so that they essentially correspond with those who do, and they and their patients are reaping its advantages.

Some points are touched upon in this article by the Editor of the Ohio Journal in which the imperfections of the report have led him astray as to my teachings. The subject illustrated by the case of the dog that died (it is suspected that it was killed), was that generally known as "spoiling." In my talks before the Illinois Society, I recognized the influence of light, heat, etc., as disturbers of chemical combinations. We all know something of the dry distillation of organic bodies and of the wonderfully varied combinations that are obtained. We all know that the photographer employs the decomposing power of light to "catch the image" and that the chlorophyll of the plant is not formed without this influence, that dry air will take away the water from flesh, producing desiccation, and that water is a great solvent,



and through this power serves to transport combinations of elements and thus *present* different combinations to each other and in this way effect decompositions and recompositions. But without micro-organisms no one, nor all of these, bring about the changes which we know as "spoiling." Still all of these are disturbing forces, but in a different sense. In the operation of microbes, of life, they are auxilliary, not primary. Life is in no sense a *resultant* of the forces pertaining to matter, but is a power which makes use of these forces for the accomplishment of its ends.

A word now about substances regarded as unstable, substances that spoil. These are simply such as are the proper food, (or soil, if that term is preferred) for microbes, and through the processes of these they are decomposed. These microbes are the smallest of microscopic objects and were, of course, unseen until very recent times. Therefore in all past time it was supposed that such substances really lacked chemical stability to such a degree that their molecules took on motions through which their elements were rearranged in simpler forms, or simpler compounds. As it was learned that by certain processes these decompositions could be prevented, the idea was entertained that there must be a disturbing cause to inaugurate these motions. Hence, the supposition that oxygen was the disturbing influence, and later the molecular motion law of Liebig. The farther we pursue the study, however, the more clearly is it demonstrated that these substances are *not unstable* except in the sense that they are decomposed by a cause that is well nigh omnipresent.

In closing, I wish to join hands with my friend in what he has said in regard to the neglect of chemistry in our schools. To the student who once really gains the first step, it is the most fascinating of studies, but perhaps the majority who are supposed to take the very limited courses in our schools never really gain this, and therefore fail to gain the key to the great treasure-house of the forces of nature.

## PROPER CARE OF POOR CHILDREN'S TEETH.

BY DR. J. HOOPER, LOUISVILLE, KENTUCKY.

The subject proposed for discussion, and one that should interest the entire civilized world, I purpose to treat under several heads :

*First*—The relation which the children of the poor sustain to the public at large. The parents of the poor classes of children, it is fair to say, have the same affection for their offspring as have the wealthy. The poor widow, so frequently left with a large family of children, without means to procure the necessaries of life for their support, dependent upon public charity, feels the same motherly endearment for them as does her more fortunate sister, blessed with all the luxuries of life. The orphan, devoid of a father's love and care, and a mother's self-sacrificing affection, are classes which clamor for our earnest attention, and shall their appeals to us meet no response? We all have poor unfortunate friends who have paid the debt we all owe, and whose children have been left without means sufficient for their needs.

Gentlemen, view the ranks of our own profession; should reverses of fortune, sickness, death, visit us to-day, how soon might our widows and children be cast forth upon the charity of the public?

Shall we stand over patients from day to day, spend our leisure hours in study, attend associations, and exchange views for mutual improvement, that we may labor for the few who will care for their teeth, and neglect the large number unprovided for, by failing to arouse and interest the public in this great cause, by showing them the duty they owe this class of unfortunates?

We cannot be true to the science of dentistry, Gentlemen, if we fail to make an effort in so noble a cause.

*Second*—The design of teeth. An allwise power bestowed upon mankind twenty deciduous teeth and thirty-two permanent teeth for the purpose of masticating the food essential to development. The physician will assert that without the proper mastication of food the foundation is laid for indigestion and many other diseases, which prevent growth in childhood, retard education, and entail many ills. A healthy state of the teeth often insures success to the man of business. The clerk, the professional man,

and the soldier have all prospered by it. Hannibal, Napoleon, Wellington, Lee, attribute their greatest defeats to indigestion, which was produced by non-mastication of food. How many business men that have failed to prosper may not have so done from the same cause? How many book-keepers and clerks have made their employers lose largely and frequently, and probably lost their positions from the same cause? The teacher that instructs the youth of our land, the physician who frequently holds life in his hands and should have a clear, unclouded brain, the lawyer, the judge may all be sufferers from it. Think of it! Life, success, everything, depends upon mastication and assimilation. How important, then, that a perfect foundation be laid in the saving and care of the little one's teeth.

The first teeth are of more value than is generally supposed, from the fact that they lay the foundation for the permanent teeth which have such an influence on our after life. Many cases are reported where diseases of children's teeth have produced diseases of the eye and ear. Dr. Samuel Sexton of New York has proven by the examination of quite a number of children in the various institutions of that city, that the above assertion is true. Any scientific oculist will attest the same truth. See, then, what an influence the teeth have on man's system, and how important that they be well cared for. The strong, brave man that would face the cannon's mouth without flinching, is the veriest whining babe with the tooth-ache. I believe that many chronic cases of disease are occasioned by the neglect of children's first teeth. If a child's teeth are tender, a failure to masticate its food thoroughly, will result therefrom. This may continue through months and years, and habits be formed which may follow the child throughout entire life. What a responsibility rests upon parents and dentists.

*Third*—Gentlemen, what are we as a profession, state or nation, doing to advance the cause of the proper care of poor children's teeth?

The definition of the word "Dentistry" signifies treatment of the diseases of the mouth and teeth, filling and saving of the teeth. Statistics testify that the enormous sum of 22,000,000 teeth are annually extracted in America. That the "land of the free and the brave" should tolerate such slavery to the for-

ceps appears incredible. How can we, a scientific profession, whose mission it is to save the teeth, allow the sacrifice of such valuable organs and enter no protest? In reading a little article from the *Medical Review*, headed "Choice of Teeth for Extraction for the purpose of Uniformity," I see where one Dr. P. has stated, in order to throw some light on the subject, that of 7,277 permanent teeth extracted it was found that 2,823 were first permanent molars, 737 were first bicuspid, and 944 were second bi-cuspid, and further states, "as statistics show that more first molars are lost than bicuspid we should as a rule extract the first molars." I venture to assert that this man destroyed more teeth than he saved.

There is another class who make the same mistake, and should be deemed opposed to the science, although they bear the name of dentists. I refer to those who with flashy cards and signs will advertise "Pure Gold Fillings," "Full Set of False Teeth so much," "Teeth filled without Pain," "Teeth inserted without Plates," "Straightening Teeth a Specialty," "Pure Gas for the Painless Extraction of Teeth a Specialty," and other modes too numerous to mention. The specialty of destroying the teeth is more applicable in their cases.

What would we say, gentlemen, of the physician who would thus advertise with his cards and signs, "Pure chloroform, ether or cocaine, for the painless cutting off of limbs and removal of eyes and fingers and toes?" Would not his professional brethren at once cry, "Charlatan! Quack! Impostor!" and the public say, "Police, arrest him, we will not allow our unfortunate citizens to be misled in such a manner." The press, ever ready to espouse the cause of the poor and afflicted, would denounce such an one in boldest terms. Yet we in our profession sit idly down and permit the gross mistakes to which I have referred.

I have a few casts here to show what serious deformities occur from the extraction of teeth, especially among children. If we extract a tooth, the cavity will in course of time become closed; or, if we file teeth, they will come together again, unless a shoulder is left. When teeth are filed, as they usually are, leaving a flat surface, the expression is changed, and hence is unnatural.

Here is a cast of a child seven years of age, who had several teeth extracted four years ago, when but three years of age,



which should have remained until she was nine or ten years of age, that the jaw might grow with the child. Observe the deformity, please, gentlemen; see the contraction and how it must disfigure her. Could you observe the little shrunken face, the appearance now of an old toothless woman, you would pity her. When she cuts her permanent teeth, they will be irregular.

I had a case of a lady who brought her little daughter to me from a distance. She was sent by her dentist, who had extracted both of her upper first permanent molars about ten months previous. In that short space of time the upper arch had contracted so that the under teeth protruded nearly half an inch beyond the upper teeth when the mouth was closed.

Here is another cast where a young man had had the cuspid teeth extracted by a dentist who informed him that they were tusks. He was quite small then, but has grown to manhood now, twenty-two years of age. A cast of my little daughter's teeth at three years of age is the same size. Here is another cast of a gentleman who had a bicuspid extracted, and that side of the mouth is the same size of the child's.

I could cite others, but this is sufficient to show the mistakes of dentists and the consequent deformities of the patients, and they not of the poorer classes. I have quite a number of casts of children's mouths, who were disfigured by the extraction of teeth, the center of the mouth being drawn to one side. The arch of the mouth in such cases meets the fate of the arch where brick or stone are removed—there is no perfect arch. The articulation and mastication are both interfered with when the arch is made imperfect.

Gentlemen, there should be more discretion used in the extraction of teeth, and more teeth treated and saved. How careful the good surgeon before he amputates a limb or takes out an eye. It is really terrible to think of the good teeth sacrificed daily without an effort being made to save them. Gentlemen, we should treat our patients as we would desire our own families treated. I have visited several charitable institutions and made inquiries concerning quite a number of others, and find that but little has been done for the teeth of these little ones, except to extract them, and to find in a few instances where some dentist has filled teeth for the larger children, but such a limited

number, that as a profession we could claim no credit for our charity. The state has done nothing in this. See how other charities have been aided, such as institutions for the blind, insane, feeble-minded, and deaf and dumb. What are we doing as a profession to assist a noble charity in this line.

The West Point Military College requires good teeth of her students, and I have been informed that two disfigured teeth would reject a student. The importance is realized in military schools, why should it not be in all other schools and in business? Both public and private schools should be posted on this subject. I think it important in business also, as I have shown how illy we are fitted to attend to it, unless our condition is such that digestion is perfect.

The question is, How are we to care for the poor children's teeth? We can lend our aid by educating the public to know the value of the teeth, the necessity of caring for them. The press will greatly assist, enlist it in the great cause, and the consequence will be that cities, states and nations must at last yield to its demands.

The work could be accomplished through the country as well as in the cities. Gentlemen of means in discussing this subject with me say that if by no other method than by taxation they would contribute for this cause. If the public be rightly informed, there will be no difficulty in procuring means for the accomplishment of the work.

I have not the time to discuss ways and means now.

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### THE CONSERVATIVE TREATMENT OF EXPOSED PULPS.

BY DAVID H. DAY, D. D. S., MINNEAPOLIS.

In the capping of exposed pulps there are very many things to be taken into consideration as influencing the final result. Dr. George H. Cushing has said that "the capping of exposed pulps is but an experiment, justifiable under some circumstances." He might have added that conservative surgery in general is only an experiment; for there are so many things that may interfere with, or prevent nature's reparative process, that no one can foretell, with certainty, the final termination of an operation of this kind.

In the first place, we must thoroughly understand the physiology of teeth and the anatomy of the parts we are operating on. We must understand function and action in health and disease.

Then, we must understand our patients, their temperament, general health and present physical condition. And then, and this is of great importance, we must understand the effects that climate, altitude and latitude have upon the patient. All these things are to be considered in the conservative treatment of exposed pulps.

No *rule* can be laid down for any operation of this or any other kind where living tissue is concerned. A *principle* there always is that should be kept in sight, but a rule, no matter how broad it may be, will have to be varied from, in almost every case.

And now we will take up these factors and see in what way they influence the result of our operation. All dentists are supposed to know the anatomy of the pulp, so I will only allude to one peculiarity in its construction. It has no lymphatics, hence has no power of absorption. Therefore, if we create an eschar or slough, and seal it over tightly, how is it to be gotten rid of? Being contained in perfectly unyielding walls, any inflammation and swelling is liable to result in strangulation of the minute blood vessels at the apical foramen, consequent stasis of the blood, and its result—death and suppuration.

Now we ascertain the patient's general health. It is quite good. That promises well for success. If he is always ailing, has headache and dyspepsia all the time, your chances for success are diminished accordingly. Suppose the general health of the patient has been good, but just at present he is in a poor condition, overworked and not able to take much exercise, business has been worrying him a good deal and he does not sleep much. Such cases are always more or less unfavorable.

What is the patient's temperament? If he possesses the sanguine or bilious temperament, the chances are propitious of a favorable termination. If he possesses a nervous temperament, there will be either sudden resolution or sudden suppuration; and if he possesses a lymphatic temperament, the chances of success are indeed small. Tendency toward hereditary diseases, such as is seen in patients of scrofulous or scorbutic diathesis greatly

lessens the chances of success. Age is also an important factor, the pulp losing its vitality as the person grows aged.

Climate and altitude are two great factors that deserve more attention than they generally get. If you practice in the Northern states, where the atmosphere is pure and dry, and free from dampness and fogs, you may count on a very fair percentage of successful cases. If, on the other hand, you practice in the South, in a fever and ague district, where malaria and miasma pervade the atmosphere, you may look for almost certain failure of almost every pulp that you cap.

Now, as to the best material for capping, and the best mode of operating. I would not dare specify any mode of operating as the best; but I will simply describe the best method I know of. Isolate the tooth by means of the rubber dam if possible. If not, keep it dry by other means. Use antiseptic precautions as a surgeon would in an operation involving the life of the patient, instead of merely the life of the pulp of a tooth.

Do not use antiseptics that are escharotics. Escharotics destroy tissues, and your object is to prevent any destructive action. Cover the exposed portion of the pulp with some non-irritating substance that, when it hardens, will leave a smooth surface in contact with the pulp itself. For this purpose gutta-percha, moistened with chloroform, and applied *without pressure*, I believe to be the best thing we have at present.

Oxy-chloride, oxy-phosphate, &c., leave rough surfaces when they harden that tend to irritate the pulp. A smooth substance, as a bullet when introduced into the tissues becomes encysted, and will be tolerated, while a rough substance as a sliver of wood, will cause irritation, inflammation and suppuration.

Over the gutta-percha some of the cements should be used temporarily, and when the permanent filling is inserted, enough of the cement should be left to form a firm foundation. Do not be in too big a hurry to fill permanently, a pulp that would often, if left alone for a few weeks, become as healthy as ever, if jarred and pounded upon might get into a most troublesome state of rebellion.

It has been said, that "all roads lead to Rome," but in dentistry there are many roads which, if followed persistently, will never bring the wanderer to the goal. There are, perhaps, many



methods that will bring success, but there are many more that surely bring nothing but failure.

Let it be the duty of every man who has chosen the noble profession of dentistry for his calling in life, to seek for the methods which promise the best success, and when he finds one, or thinks he has found one, let him not "hide his light under a bushel," but let it cast a gleam of knowledge toward his less fortunate brothers, who have been patiently seeking, but have not yet found that which they sought.

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### MY DENTAL CREED.

By J. B. HODGKIN, D. D. S., WASHINGTON, D. C.

I believe the etiology of dental caries is still a mystery.

I believe the etiology of pyorrhoea alveolaris is as vaguely known as that of phthisis pulmonalis.

I believe stopping the cavity of decay stops the decay.

I believe that this may be better done with "judgment" than with gold.

I believe in Abbey's soft gold foil, hand pressure, for all simple cavities. I believe that where "judgment" says gold is very difficult of manipulation, I have no right to take risks. It is my patients tooth, not mine.

I believe tin foil will save more teeth than any other filling material, and that in grinding surface cavities in soft teeth, tin and gold combined is better than gold alone.

I believe that in all approximal cavities in bicuspid and molar teeth, except those of the best quality, tinfoil at the cervix is the best safeguard against recurring decay.

I believe cohesive foil in the hands of two-thirds of the operators of the present day is a delusion and a snare (always excepting W. H. Morgan, John C. Story and one other man).

I believe I have no right to inflict on my patient a fifty dollar filling if I do half a day's work, for the sake of showing what I can do, if a five dollar filling will save his tooth.

I believe in amalgam and plastics for deciduous teeth, in gutta-percha for young permanent incisors; that amalgam is a good thing for grinding surface fillings; that a plastic filling renewed from time to time is better in a soft tooth with a large cavity under

twenty years than metal; that recurrent decay is a more serious trouble than original caries, that amalgam should be of few constituents and one of these be copper; that all approximal amalgam fillings are unsafe; that front tooth amalgams are damnable; that five years should be the minimum test of its behavior; that amalgam is no good when placed under enamel as a support.

I believe that a tooth pulp is better in the tooth than out of it, provided it has not been exposed.

I believe of any tooth which has ached from pulp exposure, that that pulp will die inside of four years, no matter how treated, capped, or doctored.

I believe that zinc phosphate will kill pulps; that oxy-sulphate of zinc is the best capping material; any poison strong enough to kill a microbe or bacterium will kill the tissue on which that M. or B. is lodged; that the germ theory of disease is the most fascinating romance of modern invention; that any decomposing matter irritates living tissue; that we do lots of things for our patients wisely and well without knowing why, except that it does good.

I believe that when a round gimlet will bore a square hole and a sunbeam can be made to describe a curve, that I can drill to the end of all roots. (I believe that John C. Story can make oxy-chloride stop short just at the end of the pulp canal, for he says so, and he never told a lie.)

I believe first of all in iodoform, in oil of cloves, in creosote a good deal and in carbolic acid a little; in aconite and iodine and no pepper. I believe in local blood-letting, in saline purgatives; and I *don't* believe in quinine for pericementitis.

I believe a good plate is better than most bridge-work; that a band about a root is a questionable irritant; that I ought not to promise too much for a devitalized tooth; that in some constitutions a pulpless tooth is irritating.

I believe in replantation of teeth with no promises to patients; that we should let the *Younger* process of implantation be *older* before we take the exclusive right out of his hands to practice it; that dry bones can only live by a *miracle* and, that dentists are not saintly enough to do such apostolic work.

I believe in Norfolk oysters, in hog fish, in Prewitt of Ky., in John C. Story and W. H. Morgan, but I don't believe all they say,

and I believe if I had the industry of Old Point mosquitoes I should be rich.

I believe in the old Virginia gentleman, kindly, courteous, beneficent; the few that are left are like our specimens of old coin, fast becoming uncurrent, because of too pure metal for our day and race; to be spoken of to our children in the future much as we talk of Grecian statuary or Roman eloquence, a thing of beauty and a joy forever.

And I believe in American Dentistry, in separate colleges for the education of dentists and I believe that medical men are no judges of dentistry or its needs. I believe that dentistry touches medicine at such occasional points as to make it well nigh isolated from that *science*, "falsely so-called;" it is a good thing to know a few things in dentistry all the way to the bottom—if there is any bottom—better than to know a whole lot of superficialities in medicine. I believe in concentration of thought, of purpose, of work.

I believe it is time to stop.

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### PAIN IN DENTISTRY.

BY G. W. WHITEFIELD, M.D., D.D.S., EVANSTON, ILL.

Are we not as a profession to be censured for a large proportion of the pain inflicted on those who place themselves at our mercy; those who endure the excruciating tortures of having a sensitive cavity prepared with improperly formed and often dull burs, that are pressed so hard against the sensitive tissue that they grind or scrape where they should make clean, positive cuts? In this age of improvements and progress, should we not turn our attention more to the mechanical construction of our instruments, and see that they are formed so as to produce the least pain in performing a given amount of work?

How many stop to think, when they put a bur in a hand piece, whether it is made so as to cut, not to grind out a cavity—whether it will do the work with a minimum amount of pain, or by grinding and friction inflict an amount of pain that is almost unbearable? Burs should be cut for the kind of work they are to do; for instance, in cutting enamel the axes of the blades should be parallel

to the axes of the enamel rods while in the dentine. The blades cut best, as a knife would in cutting grass, with the end of the stick inclined to an angle; the blades should be ground so as to free themselves from the chip.

Also take into account the speed of your engine; the greater the speed used, the fewer blades should the bur have. The higher the rate of speed at which you can run the engine and have the burs cut and free themselves, the less pain to the patient, as the pain is more or less intense in proportion to the amount of friction, and the length of time taken to perform a given amount of work. The pain caused by the bur is largely due to the heat produced, which is reduced to the minimum by a rapidly revolving bur, if the blades of the bur are properly shaped.

A homely illustration of this fact can be given by holding a thin plate of steel on a grind stone, which is slowly revolved. If the stone is dry the metal will be heated according to the amount of friction given it. Now take a plate and hold it against a rapidly revolving emery wheel. The heat produced by the motion in separating the minute chip, is carried off in the chip before it has time to be imparted to the mass. This is the case in using a rapidly revolving bur in dentine; the chip is separated by a quick, light touch, before it has time to communicate the heat produced to the bulk of the tooth.

This I will state as a fact, not as theory, as it is the result of my observations covering a period of years since I adopted the electric motor for my dental engine. At first it was a mystery to me why my patients complained so little about the pain produced by the electric engine.

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The following paragraph is going the rounds of the public press: The manufacture of false teeth for horses bids fair to become a regular industry. A New York veterinary surgeon recently said on the subject: "They have made wonderful progress within the past year, and they can do anything now in horses' teeth that they can do in human. I heard of a case a few days ago where this new invention was tried with perfect success. The horses teeth were pulled, one by one, and in the cavity left open a new tooth was inserted. It was literally cemented in, and although the gums were sore for a week, they finally hardened, and now give the animal no trouble. Filling horses' teeth and cleaning them is a common thing now, and in a few years that practice will be all the rage."



## PROCEEDINGS OF SOCIETIES.

## SOUTHERN DENTAL ASSOCIATION.

*(Continued from page 624.)*

## EVENING SESSION—FOURTH DAY.

Dr. Genese reported a case of neuralgia, which he treated with sedatives and local application of extract of white poppies, to be spread upon the gums. Dr. Hunt agreed with Dr. Wardlaw in the statements in his paper about the dental origin of facial neuralgia. He then cited several cases in support of the proposition.

Dr. L. G. Noel read a paper on the etiology of dental caries from the chemical standpoint.

Dr. J. R. Knapp then read a paper by Dr. Hodgkin describing the replantation of a tooth.

Dr. Morgan reported the results of an experiment to render cohesive gold non-cohesive. Dr. Winkler was not quite satisfied with the result of the experiment, as the gold had been exposed to the fumes of aqua ammonia for two hours, and only one side of the sheets was non-cohesive. Dr. Beach thought dentists ought to interview the manufacturers of gold to find out how it was rendered soft. He believed water would do it.

Dr. Morrison made some remarks on replantation. Drs. Hodgkin and Staples reported cases of replantation where teeth had remained for 30 years.

Dr. Stubblefield read a paper on the Histology of hard structures of the teeth, which was intended to summarize the work done in this direction by various investigators. Adjourned.

## SATURDAY MORNING.

Miscellaneous business and the reading of the titles of papers took up some time. The committee on dental relics was continued. The newly elected president was installed, after which considerable speech-making was indulged in by Drs. Thackston, Stockton, Prewitt and others. The gavel used during the meeting was presented to the late president Dr. Thackston. The morning session was held on board the steamer Jane Mosely, which carried the dentists to Washington by daylight up the Chesapeake Bay and through the Potomac. The excursion terminated the most successful meeting the association has ever held.

## NORTHWESTERN DENTAL ASSOCIATION.

FARGO, DAKOTA, JULY 26 AND 27, 1887.

*(Continued from page 606.)*

Dr. W. H. Barker of Miller, Dak., read a paper entitled :

## PERTINENT QUESTIONS,

of which the following is an abstract.

In our daily work of combating decay in teeth, all of us have noted certain phases, and these present themselves so often, that we are led to inquire the cause, and here we will ask the question, 'What causes decay in the upper anterior teeth, whilst the same class of teeth in the lower maxilla are seldom affected?' Often do we hear of the sad afflictions of those who are troubled by calcareous deposits, in which the kidneys, liver and other vital organs are concerned and these, not infrequently, terminating fatally. More often are we called upon to cleanse the dental organs of vast accumulations of this same calcareous deposit. Are those who are troubled with a heavy deposit of dental calculus ever troubled with calculi in other localities? Our individual experience would answer the question in the negative.

Another point of interest may here be mentioned. Nature seldom varies from the type of perfection. The dental arch is usually typical and perfectly formed, especially as to the number and class of teeth, nevertheless we sometimes find a break, and one of the sixteen that make the perfect arch is wanting. This is limited to the superior arch, and is usually found to be the case among the incisors. A strictly scientific and satisfactory answer as to why the lateral incisors of the upper maxilla are more often missing than the others of this class, is what we are searching for.

If we take the maxillary apparatus of a human skeleton, and examine it closely, we find that the bony sockets of the teeth are separated from one another by bony septa, leaving a V shaped space between the two. This rule is a law, and holds good in all cases until the third molar is reached and here we are led to ask the question why the bony septum is wanting between the second and third molars?

The following is an abstract of a paper read by Dr. W. H. Williamson of Bismark, Dak., entitled:

## INFLUENCE OF THE DENTAL CHAIR.

It may, at first blush appear to be a new but startling proposition, but upon close examination you will agree with me when I assert, that because a man passes an examination before a corps of professors, he is not therefore necessarily qualified and proficient. There are members of our profession, who sit in their offices, with their diplomas signed and sealed,—and oftentimes framed, impatiently waiting for patients, and in whose hands you and I would not risk the care of a fifteen-dollar horse. There is something more required than a sufficient amount of muscular force to “pull” a tooth, or the mechanical knowledge of how to fill one.

Our profession calls upon us to deal with men and women, in a nervous condition known to none but the dentist, and it is here that the finer knowledge, not so much of the science, as of human nature, is required. It is this quick intuitive perception, this ready and thorough insight into human nature, with a deep sense of human sympathy and pity, which gives to the member of our profession his chief elements of success.

A patient comes into the office impressed with the ideal horrors of all that is terrible. A glance should reveal to you and me the fear and trembling of a delicate, sensitive nature. We should be able to diagnose the condition of the nervous system and mind with the same accuracy and exactness with which we place a filling. Here is where our work begins. A cold “good morning,” “take a chair,” “what can I do for you,” as so often heard, in a cold, heartless business tone of voice and manner, does more to drive patients from us than anything else we can possibly imagine. While on the other hand a kind look, a pleasant smile, a friendly greeting, a tender solicitude such as we would extend to a weeping child (for we are children when sick or suffering with pain), and a kind assurance that we will be as careful and gentle as possible in our treatment, and then all through the operation remember to use words of sympathy as well as looks of kindness; they will exert an influence that can not cease to exist.

Such kindness, sympathy, understanding of human suffering and gentle solicitude, universally recommend themselves to the considerate judgment of those, who, from necessity must suffer the trying ordeal of the dentist's chair. And even if there were no

higher standpoint of observation, than merely that of financial and business success, no better principle or rule of action could possibly be adopted.

The dentist can impress his kindness and skill so firmly upon the mind and appreciation of his patient, as to oftentimes expel fear and nervousness; and in other instances induce the endurance of pain that were otherwise impossible.

The extent and good influence of kindness in our work can not be measured, and it is within the reach of every man who chooses to adopt it as a part of his profession.

The man in any profession who is honest and diligent, and who possesses an average commodity of intelligence, will soon acquire sufficient skill to do good, substantial work, and render serviceable assistance to his fellowmen, but unless he also possesses those finer elements of human character, which respond in kindness and sympathy to the suffering and sorrow of his fellows about him, he is unfitted for the actual practice of his profession, and can never rise above mediocrity.

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#### AN ARTIFICIAL RAMUS AND CONDYLE.

Dr. Cunningham, at the last meeting of the Odontological Society, showed a very ingenious apparatus invented by Herr Rosenthal, which was designed to meet the following difficulty: The ramus and condyle of the lower jaw having been removed for a sarcoma, it was subsequently found that the other side became dislocated, and, after reduction, for which an anæsthetic was required, slipped out again immediately. Gold bands were fitted accurately to the last molar of each jaw on the side where the bone had been removed, to the upper of which a thick slightly curved wire was soldered. The wire fitted loosely into a tube soldered to the band round the lower tooth and the bands themselves were fixed to the teeth by screws tapped into them. The apparatus entirely prevents the dislocation, and although there is no lateral movement the patient can eat fairly well.

*London Lancet.*



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## BANQUET.

After the closing meeting of the Dental Section in Washington, Friday evening September 9, at 11 P. M., the following gentlemen were seated in the dining room of the Jefferson club:

L. D. Shepard, 100 Boylston St., Boston, Mass.; Joseph Walker, 22 Grosvenor St., London and Belkenham, Kent; P. Calais, Hamburg, Germany; P. Dubois 2 rue d'Amsterdam, Paris; A. W. Harlan, 70 Dearborn St., Chicago; W. W. Hargrave; Southport, England; Ernst Sjoberg, Stockholm, Sweden; Charles Gaine, Bath, England; Paul Schwarze, Leipsic, Germany; J. W. White, Chestnut and 12th Sts., Phila.; J. Leslie Fraser; 5 Castle St., Inverness, Scotland; W. W. Allport, Chicago, Ill.; J. Howard Mummery, 10 Cavendish Place, London; R. Theodore Stack, 10 Westland Row, Dublin; Charles A. Brackett, 102 Touro St., Newport, R. I.; W. E. Harding, 28 Castle St., Shrewsbury, England; A. O. Rawls, Lexington, Kentucky; R. B. Donaldson, Washington, D. C.; Dr. Hans Knod, Essen in Reims, Germany; H. W. Freeman, 24 Circus, Bath, England; Truman W. Brophy, 96 State St., Chicago, Ill.; Wm. J. Younger, San Francisco, Cal.; Jonathan Taft, Cincinnati, Ohio; Orens Dupuy, Pau, France; W. W. H. Thackston, Farmville, Virginia; Wm. Bowman MacLeod, Edinburgh, Scotland; James McManus, 13 Pratt St., Hartford, Connecticut; Thomas George Read, 31 Cavendish Square, London; Melanethon Stout, 240 Wabash Av., Chicago, Ill.; William Herbert Woodruff, 13 New Burlington St., London, England; Clark L. Goddard, 131 Post St., San Francisco, Cal.; Walter

Campbell, 27 S. Tay St., Scotland ; John E. Grevers, 228 Keizersgracht, Amsterdam, Holland ; G. A. Armes, U. S. A. Fairfield Tennallytown, D. C.; Frank H. Gardiner, 126 State St., Chicago ; Alfred Crowley, 58 Maddon St., Hanover Square, London, England ; J. J. Wedgwood, 15 George St., Hanover Square, London, England ; Godfrey S. Salomon, 15 Central Music Hall, Chicago ; A. O. Hunt, Iowa City, Iowa ; U. D. Billmeyer, Chattanooga, Tenn.; J. H. Gartrell, Penzance, England ; H. B. Noble, 600, 13 St., Washington, D. C.; Prof. F. Busch, Berlin, Germany ; A. M. Dudley, Salem, Mass.; Geo. Cunningham, Cambridge, England ; H. A. Smith, Cincinnati, Ohio ; W. B. Ames, Chicago ; T. E. Weeks, Minneapolis, Minn.; Thomas O. Hills, Washington, D. C.; J. Rollo Knapp, New Orleans; La.; E. Parmly Brown, Flushing, N. Y.; Fr. H. Rehwinkel, Chillicothe, Ohio ; H. J. McKellops, St. Louis, Mo.; Geo. W. Harris, Washington, D. C.

The club room was taxed to its fullest capacity and the dinner went off swimmingly. Speeches were indulged in by nearly every one present, in French, German, English and Scotch. The dinner was a hastily improvised affair of only a few hours for preparation or invitation, and a few of the foreigners were absent, on account of the committee, having the dinner in charge, not being able to find them. Several others had departed, but those who remained and their entertainers, will doubtless look back to the dinner as one of the pleasantest events of the week of the congress, and will look forward to meeting again under circumstances equally as auspicious, in the not far distant future.

#### DR. E. H. ANGLE AND HIS SYSTEM OF REGULATING TEETH.

After Dr. E. H. Angle of Minnesota, had read his paper entitled: "Notes on Orthodontia, with a new system of regulation and retention," there was music in the air. Dr. Morrison claimed, at least, a portion of his thunder, Dr. Talbot another portion and a claim was made for Dr. Farrar of about all the remainder. This left Dr. Angle dangling in the air. Then Parmly Brown came in with some drawings taken from the *Cosmos* about 1867 or '68, in which *he* claimed *all* of Dr. Angle's system had been pre-empted by a previous author. This made it look bad for Dr. Angle. But he

was equal to the occasion. He stated in a manly, straightforward manner just what he did claim for his system, and nothing more. He explained that his method of making and using jackscrews differed from others, also the soldering of a tube to a band, which was cemented to a tooth and the applied force by using wire to fit the tube involved a *new* (which it certainly does.—ED.) method in regulating. The demeanor of Dr. Angle during this trying period was admirable, and his conscious honesty was so apparent, that the combined attacks failed to ruffle his temper, or give asperity to his tones in replying to his detractors.

### THE DENTAL REVIEW.

This issue of the DENTAL REVIEW completes the first year of its existence, although the volume will not end until the December number. We do not ask the reader to scrutinize a list of the original contributions, the number of society meetings chronicled, the value or importance of the editorials or the varied domestic and foreign correspondence, and other matters that have first appeared in this journal, but we can assure him that it has been a year of hard work to present these matters; and if the reader is satisfied with our efforts, we hope he will be sufficiently appreciative to say so, and send in his subscription for 1888, as money is required to run a journal, especially a dental journal.

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### NINTH INTERNATIONAL MEDICAL CONGRESS—SECTION IN DENTAL AND ORAL SURGERY.

It was not possible for every reader of the REVIEW to be present at the Congress, and in consequence thereof, a short account of the section is herewith presented. In the first place the weather was fine, so no one could complain of rain or too great heat. The places for meeting and clinics were spacious and comfortable. The number in attendance was large—considerably larger than the number present at any one meeting. Nearly every state and territory was represented, but more were present from the West and South, two to one, than from all other

portions of the United States. The chairman presided very well and the secretaries attended assiduously to their duties.

While very many papers were read, few, if any, will become classic. The discussions failed to add much value to the papers for some unknown atmospheric condition, which prevented many of the best speakers or thinkers present, from turning the discussion into the proper channel. The section seemed to act under some sort of restraint as though the members did not know just what to expect. We believe that this was due, partially, to the rushing of business and also to the fact that a number of the papers were not inspiring or sufficiently condensed. Some of the principal thoughts and ideas contained in them had already been better said or expressed (in some instances by the readers of the papers) before, so that much of the matter was not new. This was notably true of the papers of Drs. Jenison, Porre, Cravens, Brasseur and one or two others not necessary to particularize. We fancy that very many of the members of the section will, in retrospect, find that they carried little away with them that was read or said in the meeting of the section.

If the sessions in the church could have been as valuable as the one held in the National Theater when Dr. Andrews gave his superb exhibition, Dr. Fletcher his paper and Dr. Mummery his exhibition, then could it have been said that the section was a complete and perfect success. That one afternoon with the discussions, was worth the traveling of a thousand miles, but for the other literary portion of the programme—let us draw the mantle of charity over it.

The clinics were instructive because there were so many present who came for nothing else than to see them or participate in them. Many new and novel things were exhibited and all the various methods of operative and prothetic dentistry were detailed by word of mouth or shown practically. The clinic of Dr. Younger was witnessed by many who had not seen the operation before. Dr. Merriam of Massachusetts, showed how to do so many things that it became bewildering to follow him. The microscopic exhibit was both interesting and instructive. If such clinics could be given by state societies every year there would be no necessity for them in a Congress. There is no necessity for them before a Congress.



A Congress ought to be composed of the very best men in the country in which it is held. This Congress had a sprinkling of giants and many pigmies. Perhaps it is an impossibility to congregate the giants at one time, more is the pity. With a Congress of mental giants, intellectual feats would be the order of the day and not manual feats of every day occurrence. For those who were present, who needed the inspiration of seeing operations performed, the clinic was a success. It was beneficial likewise to those who seldom attend such meetings in their own territory. There were many such present.

The social features were compressed into greetings between sessions in the hotel lobbies, and at the public dining tables of the same. There were no private entertainments outside of those given by the General Congress, excepting a drive which was tendered the foreigners, and an hour spent in the parlors of an hotel the second day of the meeting (mention is made elsewhere of a banquet the last day). In spite of many drawbacks and the unwieldiness of the many committees connected with the section, everybody had a good time meeting old friends and making new ones, but as a scientific event in the history of dentistry, with all due deference to the managers, and the enthusiastic gush of some who have spoken or written about it as a "grand success," a "glorious epoch" and "a thing always to be remembered," we must decline so to consider it, though in sorrow we say it.

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#### IMPRESSIONS OF THE CONGRESS.

The DENTAL REVIEW sent out about twenty invitations for "Impressions" of the Dental Section of the Medical Congress, to different portions of the country. Some were sent to personal friends, others to strangers. Replies have been received from ten, and elsewhere will be found some of the views of correspondents. One of the replies is not intended for publication but we quote from it the following:

"Yours just to hand; would like to oblige you, but I have observed from the time I have been old enough to take cognizance of effulgent writers of impressions of societies, that their motives are always questioned, and that a generous

public generally gives them the credit of having 'an ax to grind' or else that their great abilities and worth have not been recognized—in other words, they are set down as *chronic kickers*. With these facts before me, I must respectfully decline to give my views or impressions. As to numbers, it proved a success; as to papers read, I did not attend often enough in the section to give an opinion,—as to clinics, there was nothing new demonstrated. In fact clinics ought to be totally ignored at all meetings (unless some one has something entirely new); the college is the proper place to teach dentistry."

The author of the above was one of the officers. We do not agree with him about clinics being devoid of interest, but we do agree with him in the view that clinical operators ought to bring their newest and best exhibits of thought and skill to display before conventions. Without here expressing an opinion on the value of the congress, to American or Continental dentistry, we invite a perusal of the "Impressions."

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#### MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.

Those of our readers who may be interested in competing for the prize offered by the above association, will do well to remember that the subject is: "The causes of deposits on the teeth, and methods of removing the same." Competitors will send their communications to Dr. C. M. Wright, Cincinnati, O., chairman of the prize essay committee, by February 1st, so that the essay may be examined before the meeting of the association the first Wednesday in March. The prize is twenty-five dollars in gold. The paper must be read by the writer, if a resident of the U. S. This is a subject which has received too little attention by the majority of dentists, and we trust, something of value and merit may be presented.

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#### DR. YOUNGER IN CHICAGO.

Dr. W. J. Younger of San Francisco, passed through Chicago last week on his way to the Pacific slope. He was induced to stop over one day, and perform the operation of implantation in the Chicago College of Dental Surgery. This he did for one of the students before the class, and a number of dentists who were hastily notified of his presence in the city. In the evening

he was entertained at dinner, by the members of the Odontological Society and a few friends. Dr. Younger gave an account of his early work in implanting teeth, and described in detail his experiences. Up to this time he has implanted between two hundred and twenty and two hundred and thirty teeth all told. He has had comparatively few failures, and in no case has he noticed any constitutional ill effects following the operation. He is a firm believer in the persistent vitality of the peridental membrane, and he is impressed with the belief from experience in replanting and transplanting teeth, that success will not follow the operation unless this membrane is practically intact. The roots of all implanted teeth are now filled by him through an opening in the crown instead of from the apical end. Contrary to the practice of many physicians, he takes his own medicine, having had a bicuspid implanted seven months since in his own mouth, which tooth was extracted on his recent visit to New York, and the socket being deepened he had another tooth planted therein just before starting for the West. It is doing well. The implanted tooth which was extracted has been placed in the hands of Dr. C. Heitzman, for examination of the peridental membrane. Dr. Younger stated that there was considerable pain in the extraction of this tooth, which was no doubt a source of much pleasure to him. He is an enthusiast in this work and not without reason, because if a tooth will only last for five years it is safe to say that the operation will be of great benefit to many persons. This may become specially true if the practice of implanting roots, for the support or attachment of bridges should be demanded. There are many cases where two molars and one cuspid or bicuspid is in place, now if a cuspid or bicuspid root can be implanted on the other side of the mouth, we have at once an additional support. Or suppose a molar is needed *it* can be planted, in this way many disagreeable gaps can be filled, for the support of bridges. With reference to the permanency of such implanted roots, when so utilized time alone will determine. Dr. Younger certainly deserves credit for his boldness and persistency in performing this operation.

## OHIO STATE DENTAL SOCIETY.

This society will meet in Springfield, Ohio, the last Wednesday in the month, and continue in session for three days. The meetings have been unusually interesting since the reorganization of the society three years ago, and we expect this meeting will not be less valuable than the one of last year held in Toledo. The REVIEW will be represented by one of the staff to make a report.

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## DOMESTIC CORRESPONDENCE.

[We do not hold ourselves responsible for the views of correspondents.]

IMPRESSIONS OF THE SECTION IN DENTAL AND ORAL SURGERY  
OF THE NINTH INTERNATIONAL MEDICAL CONGRESS.*To the Editor of the Review :*

Sir : Permit an obscure member to express a few sentiments, anent the late International Medical Congress in Washington.

The general working of the Congress was, perhaps, all that could be expected of so cumbrous a body. The different sections were apparently presided over by men of some executive ability, to whom I humbly bow.

In visiting some of the several sections, it became evident, that we general practitioners, felt ourselves very small indeed, in the presence of the confident and therefore dogmatic specialist. We are generally able to properly set a broken leg, or even to cut it off, to pull a tooth, or to excise for strabismus, but when it comes to listening to the arguments on the probable effects of these operations on the trigemini, etc., etc., our heretofore, somewhat large self-esteem lessens rapidly and becomes beautifully small.

These facts, for facts they are, prove to me that the general practitioner can not possibly have sufficient knowlege to practice as an expert in any specialty ; but deploring with my brethren our inability to know it all, our sorrow is almost neutralized — a la misery loves company — by noting the disgust of many emin-



ent specialists, particularly of the Dental Section, at, they said, the mediocre display of talent, and the positive absence of scientific research in the majority of the papers read.

Perhaps your best thinkers did not care to assume the pressure, thus leaving the gates ajar, and permitting men less wise, to rush in where angels fear to tread.

I am told that papers were read which had already done indifferent service at least once before, but then if there be probable cases of "chronic pyæmia," induced by lack of proper "treatment of pulpless teeth," you and we ought to know it; and besides were there not some older members, gifted with a perfect diarrhœa of words, granted permission to talk and talk and talk? repeating the same old story of being the instrument of the angels (aforesaid) to receive the truth, and to communicate to his brethren, the law of tissue growth or something of that kind.

I had the pleasure of hearing in your section, a gentleman of leonine aspect, discourse somewhat to the above effect, and I wondered why such an undoubted intellect was not trained in the direction of things more useful, leaving to smaller minds the pyrotechnics, which to me obscured nearly all appreciation of the really good things he said.

If the altitudinous projection of self, from ego, upon a helpless audience, in order to gratify vanity, instead of discussing questions of practical or theoretical importance, is in strict accord with human nature, as we find it, then indeed need we exclaim, *et ne nos inducas in tentationem*. NEMO.

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### THE CONGRESS.

The Ninth International Medical Congress has become a matter of record, and of honorable record for those who struggled, in the face of many difficulties and discouragements, to give it the degree of success which it attained. How large the measure of this success has been must vary, of course, in the estimation of different individuals and according to what standard is set up; but even the chronic grumblers and partisan fault-finders admit that it contained many meritorious elements. That it did not contain more is largely due to the lack of coöperation on the part of those who are most ready to criticise.

It is much to be regretted that a portion of the professional press and also of the popular press, the latter no doubt influenced by the former, have manifested a disposition to speak slightly of the Congress and to magnify the few small *contretemps* which occurred, and which are inseparable from such large gatherings.

In point of numbers this Ninth Congress has been surpassed but once. The London Congress, in 1881, with its 3,181 members, exceeded it by about four hundred; but the Washington Congress exceeded by two thousand the average attendance at the other seven gatherings of the kind which have been held. The dental section alone at Washington appears to have been larger than the whole of either of several of the International Medical Congresses.

The attendance and interest was very unequally divided among the eighteen different sections, and it was noticeable that the larger attendance was in the sections devoted to some form of Surgery, as General Surgery, Military and Naval Surgery, Gynecology, and Dental and Oral Surgery. The comparative positivism of surgery, with its frequently more immediate and tangible results, are doubtless elements that contribute largely to make its practice more attractive for many, than general medicine or a medical specialty.

The dental section was a particularly hard-working one. Clinics, papers and discussions occupied all of the time from 8 o'clock in the morning till 6 at night, with hardly more than two hours intermission, and on Friday there was in addition an evening session. There were exhibitions of materials, instruments and appliances for dentists' use, that were very creditable to the manufacturers and dealers of this country. So much was presented at the clinics, both operative and mechanical, and at the meetings, that it was not possible for any one man to compass nearly all of it; and he must have been dull indeed who could not find something to profitably occupy his attention all of the while.

The papers for reading were in abundant supply — more than could be read in full. Some of them were not of so high an order as papers on such an occasion should be; but many of them were very instructive and profitable. Some papers evidenced accurate observation, careful study, deliberate deduction and wise conclu-

sions. A very limited number, as must always be the case, were worthy of the highest honor as embodying the results of long years of painstaking original investigation.

The plan, adopted of having the discussion on each paper opened by some one who had previously studied the subject, and prepared himself to speak upon it concisely, proved very advantageous, and the other discussion was usually kept within profitable limits.

Very great credit should be given to all the officers, including the different committees of the section, for faithfully performing their several parts. The chief burden of the responsibility was felt by a comparatively limited number of men, and the amount of work which they performed during months of preparation and at the meeting, was really herculean. Their reward must be in the consciousness of duty done, in the large measure of success attained, and in the grateful appreciation of hundreds of their co-workers and beneficiaries gathered from all lands.

The beauty of Washington as a city, the many attractions it possesses for the sight-seer, the bright weather throughout the week, the numerous cordial hospitalities extended, the meetings of old friends and the making of new ones, all contributed to heighten the enjoyment and make many pleasant memories for those who were so fortunate as to have had a part in the Ninth International Medical Congress.

C. A. B.

Newport, R. I.

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## DENTAL AND ORAL SECTION OF THE INTERNATIONAL CONGRESS.

BY W. W. H. THACKSTON, M.D., D.D.S.

The Dental and Oral Section of the International Medical Congress, which convened in Washington, September 5th, 1887, will mark an epoch in the annals of dental science never to be forgotten by those whose good fortune enabled them to be present, and participate in the transactions of that assembly of representative men from nearly every civilized country of the world.

It has been the privilege and office of the writer, through a long series of years, to meet, observe, and upon many occasions

preside over deliberative bodies,—social, scientific, literary, political and professional; and without partiality or prejudice, I can sincerely aver, that in my unbiased judgment, the officers and members of the 18th, or “Dental and Oral Section of the Congress,” were the peers, if not the superiors, of any equal number of men with whom I have ever been called to associate.

For scholarly attainments, for scientific research and investigation, for operative ability, for manipulative skill, and real, substantial advance in every division and department of dental science, the “Dental and Oral Section of the Congress” has never been equaled or approached. The addresses made, the papers read, the discussions had, and the clinical illustrations given, would honor any department of science, and distinguish any convention or congress of men.

The eminent success of the “Dental,” which, it is said, was pronounced by President Davis, the “Banner Section of the Congress,” was chiefly due to the fortunate selection of its presiding, ministerial and executive officers. From President J. Taft and his able and accomplished corps of secretaries, treasurers and committeemen, down to the door-keeper and janitor, all understood and well performed their prescribed and allotted duties. To these gentlemen and the local membership, the resident dentists of Washington City, the profession owe a debt of gratitude never to be forgotten, and which it will be difficult to requite or repay. Where all did so well—where all so cheerfully met and so efficiently performed the parts assigned them—it would be ungenerous and invidious to discriminate; but this much I will say, if I were deputed to arrange another “Congress,” and another “Dental and Oral Section,” I would, with one exception, and that myself, select the same officers, the same representative membership, the same city in which to hold the sessions, and would seek no more elevated, hospitable and chivalrous associations than are found in the professional brotherhood of Washington City.

Of course I do not wish to be understood that I unqualifiedly subscribe to or indorse all that was written and spoken during the session of the Congress. Some of the papers and speeches were obnoxious to just and severe criticism; some of the theories and examples in practice were “threadbare” and exploded,



others, with the claim of novelty and originality, were, in my judgment, fallacious, impracticable and worthless, if not positively hurtful and injurious. But so it must ever be in the deliberations of so large an assembly of men, each distinguished by some personal or mental idiosyncrasy—some peculiar individuality of perception, thought and conviction. These, however, were the exceptions—the spots upon the sun's disk which little, if any, “dimmed its lustre or obscured its radiance.” Altogether, and, taken as a whole, the character and reputation of the men composing the body, the contributions and transactions, oral and written; the clinical illustrations; the real, true and valuable advances; and the displays of outfit and professional paraphernalia, eclipsed and exceeded anything ever witnessed in my experience of nearly half a century, and so far as I know and believe, has never been approached or equaled in our professional history.

To say nothing of the purely scientific and other phases and features of the Dental and Oral Section of the Congress, the moral effects will be recognized, and the elevating and beneficial results will be acknowledged by dentists in all the coming years of that future which now so auspiciously dawns upon the dental department of the “healing art.” So feeling, so “impressed,” so believing, I vote the Congress and its “Dental and Oral Section,” a grand and brilliant success, an honor to its officers and members and a benefaction to “suffering humanity.”

FARMVILLE, Va.

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#### IMPRESSIONS OF THE DENTAL SECTION OF THE MEDICAL CONGRESS.

*To the Editor of the Dental Review:*

Sir: Let me say first of all that the Dental Section of the Medical Congress was a success far beyond our most sanguine expectations. The lessons to be learned are many, and the profession will generally do more varied and better work as the result of the meeting.

Being a dentist I took no interest in any other section, and attended every one of the many meetings. The work done was great in quantity, so that from the opening, 8 a.m. Sept., 5th, to

the close 11 p.m., Friday, Sept. 9th, the time was all taken up, and many valuable papers had to be read by title. It is a misfortune to read papers by title, as their discussion would impress their value or uselessness upon the minds of the members, this cannot be, when the subject only is mentioned.

One fact which impressed itself more upon my mind than any other, was that we should all keep carefully prepared records of everything we do, at least of such subjects as we expect to bring before societies, or have published in the journals. Statistics where they are the result of actual work, and not coined out of a free imagination, will always be found valuable and interesting matter for thought. Of course, statistics to be scientific must be an actual record of the facts in the case. We must know our men to be honest and then believe what they give us.

One can hardly imagine how much time it meant when we say we attended every meeting of the section, but to have missed any would have been our loss, as we would have failed to get something that impressed us at the time, and perhaps we will never have an opportunity of hearing it in the same form again. Sometimes to have false theories presented, and shown to be such is the best teaching we can have.

It is not a hard matter for any of us to find fault, still I think a little fault finding not a bad practice when it is done by a friend, and in this case by one who has a high appreciation of all the good work done by the section.

During the first days of the meeting there was a lack of system manifested in the committee work. No one seemed to understand his particular duty, and to have expected some one else to do it for him. The facilities for registration being most conspicuous for their incompleteness. There should have been means provided for a more rapid registration, and more interest taken by the members of the committee having it in charge. There were many who did not become members only through a lack of proper urging. One gentleman, I know, being in line three hours, before he received his certificate and badge, and then the badges gave out before the registration was completed.

Another point which to me appeared bad, indeed, that was the admitting anyone who made application. Some who should not

have been received, paid their fee and became entitled to all of the rights and privileges of the meeting.

A representative of the Tooth Crown and Bridge Co., I saw taking an active interest in some of the members. He is the same person many knew, during the old rubber patent times. It is a question now whether the dentists shall pay or fight.

It seems to me that entertainment committees are useless at a meeting of scientific men. Those who attend such meetings, should have the interest of their profession at heart, and need none of these things to create an interest for them. No man, however brilliant, but has a weak side, and it is the prime object of such gatherings to make all of a much broader gauge. Outside attractions, such as these side shows are, have nothing to do with scientific meetings—they do great harm, and detract from the interest and value of the work. These so-called entertainments simply become mobs of men and women, and are a disgrace, and should be discouraged by all active members of the profession. Any one who attended those given at Washington, or, in fact, those of any other association or society, will find what I say to be the case.

The foreign members were taken from place to place during the meetings of the section. Some were very seldom at the hall, while others, I am happy to say, were at all of the sessions.

Another impression of which I cannot see the end—that is, what effect will this medical recognition have upon the rank and file of the dental profession? What effect upon dental schools, and dental education generally? What degree will be required? The M. D. or will the D. D. S. be tolerated as the equal in value of any that may be given? Will the American Medical Association, at some future time, rescind its action if the dentists do not fall into line and require one universal degree—say that of M. D.?

The clinical part of the programme was a credit to any meeting. The Clinic Committee—Dr. Bodecker chairman, and Dr. Gottschaldt secretary—both of New York, worked hard, and deserve all of our gratitude for the success of their department. The local committees were not up to the western way of doing business. Let some of them come to the Illinois State Dental Society, the Iowa or the Missouri State meetings, and they will see how such business is done out west. The operating rooms

had plenty of good chairs, but nothing else—not even water to wash the hands. The mechanical rooms were somewhat better. The patients the first day were a few old soldiers, for whom extraction would have been the proper thing in most cases, and these people seemed to think they were doing us a great favor. One old fellow said to me, that the government was paying \$10,000 for the work done. If such was the case, the committee should have paid for all the material used. The bridge clinic of Dr. Shriver, of Iowa, I deem of special interest; his methods are simple and complete, and the results near perfection. Dr. Matteson, of Chicago, and Dr. Parr, of New York, put on beautiful porcelain crowns.

Dr. Wm. J. Younger, of California, performed his operation of implantation, and he was the center of an interested body of dentists. He also performed it before the surgical section. To once see this operation makes it easy for any one. But the questions to be solved are, will the teeth last? Are they of sufficient durability to warrant the pain necessary for the proper insertion of such cases? I hope so, and the history of the cases give us great encouragement. Whether the operation is feasible or not, does not lessen the honor due Dr. Younger for his efforts in this direction. Dr. Call, of Illinois, demonstrated his method of making all gold crowns.

An electric motor which was on exhibition took up too much room to make it practicable. These motors have not reached that degree of perfection we would like to see. Something simple, effective and cheap is needed. Water where it can be used is now capable of a more universal application for motors than any other force. The treatment, and filling of teeth, etc., was of a very practical and beneficial kind. Much good work being the result of the clinics. Several methods of regulating teeth with the appliances were demonstrated. One room was devoted entirely to those using the microscope. The clinical programme of Sept. 9th, showed thirty-five clinical operators.

At the general meeting of the section, the papers were of much interest, and the discussion of the same was generally of a high order. The president requested those taking part to put their thoughts in the best language possible, which was generally



done. Perhaps this may account for the attention the discussions received.

The Arlington Hotel was the dental headquarters, and the time spent there meeting old friends, and in making new ones was pleasant to all, judging from the satisfied faces of those we met.

It did our hearts good when president Davis told us that our section was the largest and best attended of any at the Congress.

Prof. Busch of Berlin made one of the most interesting presentations of a pathological subject—using the sections of elephants tusks for illustrations. Dr. Weeks, of Minn., read an exhaustive review of the different matrices, this with the discussion will be of practical use in operative dentistry.

The number of dentists at the opening was about 450\* and I think about 200 or 300 were out sight seeing or arrived during the week. Dr. Atkinson arrived on Wednesday and there was no one who took a deeper interest in the work of the section. He never missed a meeting from that time to the close. Dr. Cunningham of England, presented the subject of Immediate Root Filling, with a tabulated record of some 700 cases, 500 of them, cases of Immediate Filling. His practice of leaving cotton with arsenic at the apex of root canals surprised me. Also the practice of Dr. Cravens, of using no medicine for disinfection, simply dry cotton to clean out the canals.

In conclusion I must say that President Taft and Secretaries Dudley and Rehwinkel proved themselves efficient officers, and the closing address of President Taft was the best of the meeting. St. Louis, Mo., September 27. DENTIST.

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## IMPRESSIONS OF THE NINTH INTERNATIONAL MEDICAL CONGRESS.

*To the Editor.*

SIR: The much spoken of Ninth International Medical Congress is a thing of the past, and the dental profession at large is made happy by having been allowed the privilege (?) of holding a meeting simultaneously in the same city, and having had the extreme gratification of posing as Section 18, or the tail end of the Congress.

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\*We counted 276 at the opening meeting. ED.

The Congress, to which the world (the new world at least) has looked forward with such great expectations,—what has it brought forth? Has it brought the medical and dental professions into closer relation? Has it elicited any new ideas,—any new grand ideas, such as one would expect at a gathering of this sort? If my opinion has any weight, it has not.

Section 18 was a convention of dental practitioners, some of whom went thither to exhibit their skill, others to read papers or have them read by title, but more attended to advertise themselves at home among their friends, others to have a good and enjoyable time and lastly a few went in the interest of dental science.

The dental section was certainly treated by the Medical Congress and by the press as a foster-child, being the last one on the list it was not recognized by the papers, and a great many who attended with the object of receiving a cheap newspaper puff failed to see their hopes realized. But receiving such flattering notices at home in their respective country papers has repaid the expenses of a great many ere this.

Intending this as a sketch of the dental section, I first of all beg the grace of those whose opinion of the Congress may differ from mine, but I feel confident that I do not stand alone in writing up my "impressions" of our gathering, but that different views on the subject will be heard.

About four hundred (400) of our American dentists attended the meeting which means about 2½ per cent. of all dentists practicing, would this be called a representative meeting of any profession, or trade, or any gathering of this sort, where each individual member had all the rights and privileges of all, nay, a thousand times nay? Had every one come with credentials from some local or state society, then we might have said, yes, these 400 dentists who have gathered together, are representing from 6,000 to 8,000 dentists of America, then we would have had some sort of a representative meeting; but as it was, every one came independently of all societies and some without the slightest knowledge of dental ethics, and some without any invitation.

Who was at fault? I do not wish to criticise any one in particular, but the fault must have been somewhere in the different medical sections as well as in the dental section.

Any one filling out a blank, whether truthfully or otherwise, and after paying an admission fee of ten dollars, had the right and privilege of wearing a shining medal, the size of a silver dollar, and had the pleasure of gormandizing for once in his life without any extra charge; and furthermore had the satisfaction of being introduced as Dr. so and so to his excellency, the President of the United States. This and the newspaper puff at home ought to have repaid anyone for having been in Washington from the 5th to the 10th of September, 1887.

Was Europe represented as it should have been, in an international affair by having all in all 200 in attendance? Some of these have certainly an international reputation; but even of the foreigners present a great many would be called the "lesser lights" of the profession in their respective countries.

How is it that so many good men were particularly attractive by their absence? why were the Eastern states so sparsely represented, what had become of the Philadelphia delegation? If it had been midwinter, their special train might have been reported as being caught in a snow blockade, but this being a poor excuse in the summer, I will give up this question for some one else to answer.

Chicago, your own city, was well represented, as was Illinois; but then Western men are known to take a vacation once in a while, therefore we can appreciate the fact that twenty-two Chicago dentists attended the convention, with probably the intention of carrying their petty disputes into the minutes of the International Medical Congress, but fortunately very little wrangling and hair-splitting by your home brethren was indulged in.

Now a few words about the papers. Were the papers read, and those read by our worshipful Grand Secretary 'by title' and in full, instructive enough to go hundreds, nay thousands, of miles to listen to and participate in their discussions? Were any new theories advanced over old ones? Were any old ideas discarded, because they were behind the times? It strikes me that the store room of theories was opened and searched through; old-fashioned pet theories were fished out and dished up as new and grand discoveries; objections were raised to the same and the theories were upheld simply for argument's sake. The discussion on no paper was exhausted and the reason for this was in consequence

of the great number on the program. How could our presiding officer allow ample time for the discussion of the papers, as, before any one could really digest the theme thoroughly the subject was passed. The president was not to blame; on the contrary, the dental section is to be congratulated upon its efficient presiding officers.

Now a few words regarding the clinics. Clinics there were plentiful and good ones, but too great a rush was made on the part of the operators to shine as one of the great operators of to-day when in reality the best class of operators had remained at home.

Suffice this, as far as the Ninth Medical Congress is concerned, let us hope that the Tenth will be better attended not in quantity but in quality; and when the dentists again congregate with medical men let us try, at least, if nothing else, to show them how to dress professionally on an occasion of this sort, and let us, three years hence, leave our old clothes at home and make as good a display among our German brethren as possible.

Being a poor reporter I tremble in anticipation of receiving a severe criticism for my off-hand remarks. ALBERTUS.

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#### AFTER THE BATTLE.—IXTH I. M. C.

##### *To the Editor of the Dental Review:*

The battle is over, and the smoke has cleared away. The Omega section of the IXth I. M. C. has passed into, and become part of history. I was there. To place myself in a proper light before you, Mr. Editor, permit me to say that I was an ardent supporter of the section before its organization, that I aided it financially to the utmost capacity of my exchequer and that I aided it, or endeavored to do so, by accepting a position as a clinical operator, that I was on hand and performed my clinic. I never liked the management, yet believed that every dentist ought to help make the section a success and I went in and helped to do so. While often it is easy to say afterward how this or that might be done, the management was open to criticism before the Congress met. They asked men to operate at clinics, to present papers to the section, irrespective of any question of their ability to do so, every body was asked right and left "give us a paper, give us a clinic." And the result is a dismal failure of the sec-



## FOREIGN CORRESPONDENCE.

tion, those in authority and power must now pay the tithe and tax every man pays for honor, position and power.

The dental section in every phase was a teetotal failure. I believe in dentistry being a branch of and a specialty in medicine, but for St. Joseph's sake, let us never be the tail in a medical convocation again. The humiliation depicted on the faces of those who stand high in the dental profession, was enough to bring tears to a mummy's eyes. The clinics? Great Scot! And what were they, what could be expected in the way the clinical operators were secured. All respect to the gentlemen whose names I am about to mention, they may be expert in their special fields, but what are they before an International Medical Congress? What are Moore, Case, Wassall, Spaulding, Call, Weeks, Salomon, Davis, Ottoby, Ludwig, Conrad, Whitefield, Smith (M. E.) and a host of others, before an International Medical Congress?

The clinics signally were a failure from beginning to end. The papers? My, don't ask me about them. Some of them were rehashed stuff I have often heard before. Some, had they never seen the light of day, would have proven of untold value to the section. And may we evermore be saved from padded long-winded papers. The entertainment of the handful of foreigners, by the section, was great indeed, there was not a single thing done for them. Had not a few dentists put their hands in their pockets and given them a banquet, they would have returned home with no pleasant remembrances of American hospitality. Let the mantle of charity gently fall on this great fiasco, and let's now go to work and have a dental congress, and be dentists for a while longer.

Yours truly,      MEMBER IXTH I. M. C.

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## FOREIGN CORRESPONDENCE.

A NEW OBTUNDER (?); HISTORY OF A SINGULAR CASE.

*To the Editor of the Dental Review:*

SIR:—Thinking perhaps a few remarks on this case would be of some interest, owing to its peculiarity, and no mention ever having been made on this subject to my knowledge, I submit it for information.

The patient, a gentleman, age 22, whose occupation is tasting

*mustard seeds*, presented himself to me for treatment. I discovered 9 cavities in his teeth, with pulps exposed in 7, causing comparatively no pain; neither was it painful to the patient to extract the pulps, without first making an obtunding application, as is necessary in almost all other cases of exposure (excepting those which can be rapidly extirpated with a wood point). At the same time the pulps presented a most healthy appearance, though considerably hypertrophied, and the cavities apparently were quite free from decay. How can the peculiar characteristics of the case be accounted for, viz.: Deep-seated cavities, involving the pulps, and almost absolute freedom from decay and sensibility. Is it attributable to the action of *oleum sinapis*, or some peculiar action of some other portion of the mustard seed? If so, have we not here a clue to some other remedy, that may be a valuable adjunct to the Dental Pharmacopœia.

Yours truly,

W. L. CROLL, D. D. S.

London, Eng., Aug. 30, 1887.

*To the Editor of the Dental Review:*

DEAR SIR:—I think your correspondent whose letter appeared at the top of page 585, August 15th, can soon be helped out of his difficulty. The instruments of my designing that you mention in the same number of the REVIEW, were made especially for the cases mentioned by your correspondent, viz., posterior approximal lower bicuspid and molar cavities where the teeth tip back and in. If you would kindly loan some good instrument maker your instruments as patterns, life might be made less of a burden for some of our co-laborers.

London.

W. MITCHELL, D. D. S.

## REVIEWS AND ABSTRACTS.

Traité de Prothèse Buccale et de Mécanique Dentaire, by Dr. Andrieu, Paris: 1887, Octave Doin, editeur. pp. 569, with 358 illustrations; paper covers, price 18 francs.

This is the first pretentious work on buccal prosthesis and mechanical dentistry ever issued by a French author. It covers the entire field of prosthetic dentistry and coming as it does from

the hands of the distinguished translator of Harris' Principles and Practice, is a guaranty of faithful attention in every minor detail in the whole production. The bibliography is very complete, and the addition of many cuts from foreign sources is quite an addition, as they will render plain to our readers, not familiar with the French text, many of the uses of appliances on first examination. The work will undoubtedly have a large sale in foreign countries, which its undeniable merits will amply justify. At a later date we will furnish excerpts on some of the new methods described.

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TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY AT  
THE TWENTY-THIRD ANNUAL MEETING, HELD AT JACK-  
SONVILLE, ILL., MAY 10TH TO 13TH, 1887. ILLINOIS STATE  
DENTAL SOCIETY. PUBLISHED BY THE SOCIETY.

This volume contains 151 pages of reading matter, one page less than the Transactions for 1886, and twenty-three pages of minutes, exactly the same number as the preceding volume. Quite a coincidence. It may be stated, however, that the pages of reading matter in this volume might have been lessened considerably, without a corresponding loss to the scientific reader. Not that it contains no matter of scientific value, but that there are many instances where commonplace repetitions have been allowed to creep in, and where stale theories are flaunted as something original. In partial extenuation, it may be said that this is true of nearly all published transactions, and to a certain extent it is unavoidable; but the idea should be fostered that in this era of dentistry we have no time to waste on useless verbiage, and when a member gets up in a meeting simply for the purpose of hearing himself talk and seeing his name in print, that his remarks—containing nothing of interest—should at least go no farther than the publication committee.

In appearance the volume is scarcely equal to that of the preceding year. The binding is not bad, the printing is not good, and the spelling and grammar are execrable. Near the beginning of the work we are encountered by the suggestive little remark, "errata." In this connection it might be intimated that the whole page could well have been filled and then the demand not fully supplied. One instance is enough for illustration. On page

129 a speaker is made to say, "There is an infant variety of mechanical force and manipulative application \* \* \* \* \*"  
Now "infant variety" is good, in its proper place, as the speaker himself will doubtless admit, but it is very wearing on the reader's nerves to trace out the connection in regard to filling teeth. If the speaker had been prophetic and had in his mind the publication of the proceedings, he might, with slight change, have applied the remark to the publication committee in this wise: "There is a variety of infant application, etc.."

The president, in his address, draws attention to the deplorable fact that only about one-seventh of the whole number of dentists practicing in the state are members of the State Society, and aptly remarks that the local societies lately started in the different parts of the state will doubtless do much towards arousing interest in society work, and eventually add to the membership of the State Society. His remarks on the education of children regarding their teeth—either through the medium of text-books, or lectures in the public schools, are timely. This question should be agitated.

The paper on "Regulating Appliances," by Dr. Norman J. Roberts, contains some useful hints. His method, as stated by himself, consists in utilizing the elasticity of black rubber for the motive power to force the teeth into place. He also, in certain cases, uses piano-wire springs.

The worst thing about the paper of Dr. Homer Judd is the title. "Dead Teeth in the Jaws" has an unscientific ring. An absolutely dead tooth will be cast off by nature or destroyed by absorption. The whole paper is a telling arraignment of the theories advanced in the *Medical Record*, by Drs. Sexton and Bartlett, and while the essayist draws attention to the fact that pulpless teeth are not necessarily dead teeth, yet it would have been better to give his paper the proper title of "Pulpless Teeth in the Jaws" rather than encourage the misleading nomenclature of Dr. Sexton, who invariably uses the term "dead teeth" in this connection. The paper is an able one and exposes the utter absurdity of Dr. Sexton's claims, that it is dangerous in all cases to leave pulpless teeth in the jaws. Dr. Sexton is held up to ridicule in many places—and justly so—for his extreme views on a subject about which his own remarks prove him to lack common



knowledge. The essay covers fourteen pages and is full of interest throughout.

Dr. A. W. Harlan presents a paper on "Practical Therapeutics, with Notes on the Application of Special drugs." He advocates the substitution of salol and iodol for iodoform, the former being "without odor or other disagreeable qualities." Ozonic ether is mentioned as being more stable than peroxide of hydrogen and may be used for the same purpose in dentistry as the latter. Lanolin is a convenient vehicle for remedies applied externally for the relief of pain. Attention is urgently called to menthol as a local pain obtunder. The paper is timely and useful, but there is one item which the reviewer finds it impossible to overlook. This relates to the little legend commencing with "nempe," and ending with "aegroto." Ye Gods!! How weary we are! We don't know a "peregrina" from a "phenominozein." We are lost in a labyrinth of tongue-twisting hieroglyphics from the catacombs. We don't know what it all means, and heave a sigh for the commonplace mortals among dentists, who have had the echo from the tombs of a dead language unsuspectingly sprung upon them. It is cruel, and when we recover enough to read on and find that there is an English translation of it, we wonder what in the name of the seven sleeping sisters, all that classical jaw-break was placed there for any way. Surely the demands of science would have been as fully appeased by the translation, without the risks attending the publication of the original. This digging up of defunct tongues in that manner is enough to—well the fact is, the moldy air surrounding it is too liable to turn us all "aegroto."

Dr. L. C. Ingersoll, in his paper on "Medicinal Stimulants," raised the point that of late too much stress has been laid on the advisability of using drugs which are proven by experimentation to be non-irritating germicides; and that the necessity for stimulation has been correspondingly ignored. He makes a strong plea for the use of medicinal stimulants, and his paper should be carefully read.

In the excellent paper by Dr. T. W. Brophy, on "Diagnosis of Oral Tumors," the essayist advocates the principle of exclusion as the surest, and most methodical means of diagnosis. Unique

specimens of malformations are also illustrated at the end of the paper.

The report of the Committee on Clinics by its chairman, Dr. C. F. Matteson, and the discussion which follows it, form good readable matter, though the advanced practitioner will find little in it that is new.

Dr. Wm. N. Morrison presented a paper on "Operative Dentistry, as applied to Deciduous teeth." It urges the dentist to renewed effort on behalf of the children's teeth, and advocates the use of amalgam in preference to the phosphates and gutta percha, the latter, it is claimed, being acted on by the secretions of the mouth. If the essayist refers to pure gutta percha, he is evidently at fault, as the secretions of the mouth will not influence it in any way. It may be worn by attrition, but it will not be acted on chemically.

Dr. L. L. Davis' paper on "The use of the Microscope in Progressive Dentistry" is pithy and appropriate. Read it and profit by it.

The reports of the committees on "Dental Art and Inventions," and "Dental Science and Literature," show an encouraging advance in these departments.

Dr. G. V. Blacks' lectures on Micro-organisms, before the society each day at the meetings are recorded, and form for the students, young and old, a most interesting chapter. Dr. Black always says what he has to say, in a plain and entertaining manner. His lectures are becoming a prominent feature of the meetings. More power to his arm and brain! The report is intensely interesting throughout, though the probabilities are if the doctor had written it himself, he would have spelled many words vastly different from what they are.

On the whole the transactions for 1887 are well worth studying, and the reviewer commends the volume to the reader, with the pathetic injunction to have charity for the mistakes. The ways of the Publication Committee are not always ways of pleasantness, especially when their work is reviewed by

NEMESIS.

At the late meeting of the British Dental Association, Mr. E. L. Williams read a paper "on the value of antiseptics in dental surgery." He said: No apology was needed for introducing the subject before the association, because he was convinced of its importance, not only in its purely scientific aspects, but more particularly in its practical bearing upon the every-day work of modern dentistry. \* \* \*

The great principle which regulated all operations and which had been the very foundation of success was absolute surgical cleanliness. He feared that as dental surgeons they had even yet scarcely grasped the importance of that principle. It was true that their sphere of surgical work was limited, and that they were concerned for the most part with hard tissues, which they looked upon as being comparatively indifferent to external conditions; but they must not forget that even in the simplest operation they had to do with living material, not to speak of those branches of their work where they were brought face to face with ordinary surgical conditions, and when the result of their treatment was wrapped up with the constitutional welfare or woe of their patients. Nature stood more insults in the mouth than in any other part of the body, and her long-suffering had admitted of much reckless treatment with comparative impunity. \* \* \*

If this were not so they should approach the mouth with a far greater degree of caution, and should employ every possible antiseptic precaution for procuring a minimum of a local and constitutional disturbance. But it yet remained to be proved how far they could improve on present results by being more cautious, and he felt confident that in special cases antisepticism *must* lead to more brilliant results if carried out with thoroughness. \* \* \*

Cleanliness, then, should be an elementary but essential principle of their practice. All their instruments should be not only clean, but, where at all probable to come in contact with the soft tissues, absolutely antiseptic. \* \* \*

Mr. Williams concluded with a reference to the filling of dead (pulpless) teeth and the advisability of rendering even temporary fillings antiseptic.—

*Dental Record.*

[This does not look as though Listerism was dead.]

THE AMERICAN SYSTEM OF DENTISTRY. By various authors, Vol. III, edited by W. F. Litch, M. D., D. D. S., Lea Brothers & Co., publishers, Philadelphia, Pa. Cloth \$6.00, leather \$7.00, morocco \$8.00. We have received the third and last volume of this work, and will give a more extended notice of it next month, our space being too limited in this issue.

Wie Studirt Man Medecin? by Dr. Hugo Dippe. Wie Studirt Man Zahnheilkunde? by Julius Parreidt, dentist in Leipsic, (How to study medicine and dentistry in Germany).

Diseases incident to the First Dentition, by J. W. White M.D., D. D. S. (reprinted from the American System of Dentistry), Philadelphia, 1887.

A very instructive and readable paper will be found on page 459 in the *Journal of the American Medical Association* on "Antiseptics in Medicine and Surgery" by M. G. Ellzey M.D., of Washington, D. C. Send ten cents and get the *Journal*, and read the paper.

#### PAMPHLETS RECEIVED.

The Dental Chair. A poem of lights and shadows by Geo. H. Chance, D.D.S., Portland, Oregon.

De Aetiologie der Tandcaries. Historisch Geschetest. Mr. L. De Hartog, Amsterdam, Holland, 1886.

Dentistry and its relation to the State, by George Cunningham, B. A. (Cantab) L.D.S. Eng. D.M.D. Cambridge, England; and Compulsory Attention to the Teeth of School children (the Army and Navy), by W. Macpherson Fisher, L.D.S., Eng., Dundee, Scotland, with a preface by Sir John Tomes, F.R.S., papers read before the British Dental Association, August, 1886.

Annual report the Commissioner of Pensions for 1887. Hon. John C. Black, Commissioner, Washington, D. C., Government Printing Office, 1887.

Programme of the First District Dental Society of New York for 1887-8.

Transactions of the Texas State Dental Association 1887.

First Annual Announcement of the Dental Department of the Northwestern University, Evanston, Ill. (The college is located in Chicago.) John S. Marshall, M. D., dean.



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TO THE EDITOR OF THE DENTAL REVIEW :

In the August number of the REVIEW, I noticed an article "from a correspondent," inquiring how to make a perfect filling when the cavity was on the distal surface of a bicuspid or molar. He complains of not being able to properly fill the "*undercuts and grooves or retaining pits.*" I wish to say that probably the fault is not with the operator but his method of filling. Undercuts or retaining pits should never be made at this point, except in rare cases, for it weakens the cervical margins and invites decay. Use a matrix and soft gold, or tin and soft gold combined, making your retaining groove near the grinding surface, *if one is necessary*, and "go thou and do likewise."

Read the article on matrix filling in the September number of the DENTAL REVIEW.

CHICAGO, Ill.

T. B. WHEELER.

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MEMORANDA.

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Dr. O. H. Staehle, of Joliet, has located in Munich.

The Odontological Society of Holland has a membership of 12.

The Northwestern Dental Infirmary of Chicago has been chartered.

Drs. Wedgwood and Gartrell were in Chicago after the Washington meeting.

Dr. Edmund Lambert, formerly of Petersburg, Ill., has located in Chicago.

Dr. C. L. Goddard, of San Francisco, Cal., spent a few days in Chicago the last of September.

Dr. Paul Dubois, of Paris, attended the Medical Congress. He is the chief editor of *L'Odontologie*, Paris.

Stenocarpine is the latest new local anæsthetic; two and four per cent. solutions are used for soft tissues.

The edition of 3,000 on the "Management of Pulpless Teeth," issued by the Odontological Society, is exhausted.

Sodium fluosilicate, is the latest antiseptic and disinfectant; it is soluble in water and is more potent on that account.

Dr. F. W. Sage has retired from the dental department of the *Cincinnati Medical and Dental Journal*, to take a much needed rest.

Another dental department of a medical college will go into effect in Washington this winter. Dr. E. Maynard is one of the professors.

The success of the medical editors banquet in Washington was due largely to the energetic work of Mr. J. W. Lambert, of St. Louis, Mo.

The *Southern Dental Journal* calls him Dr. "Tandlak" Sjöberg. Tandlak is good, but not as a given name. The Swedish for dentist is Tandlak.

The Odontological Society of Chicago will shortly publish a monograph on the "Pathology of the Dental Pulp, and its Conservative Treatment."

White Pinus Canadensis is recommended to allay the pain from recent burns or scalds. The surface is to be painted with it, using a camel's hair pencil.

The next annual meeting of the Ohio State Dental Society will be held in Springfield, on Wednesday, October 26th, and continue three days. J. R. Callahan, Secretary.

Wm. C. Roberts, DD, L.L.D., Chancellor of Lake Forest University, delivered the address at the opening of the Northwestern College of Dental Surgery, Monday, October 3d.

Dr. Angle says that pressure should be applied continuously in moving a tooth, no intermission is permissible. After the tooth has been removed to position it should be held immovable.

Prof Dr. Busch, of Berlin, was introduced to the dental section, and made a few remarks, stating that he had spent fifteen days on the ocean, and had only arrived on Thursday morning.

Dr. John E. Grevers, of Amsterdam, Holland, spent a few days in Chicago the latter part of September. Dr. Grevers is chief of the Dental department of the policlinic in the University of Amsterdam.

The committee appointed to examine into the propriety of lengthening the college year, of several colleges belonging to the National Association of Dental Faculties, consists of Drs. A. O. Hunt, A. H. Fuller and S. H. Guilford.

There are only twenty-eight dentists in Amsterdam. Population 500,000. In order to practice in that city an examination must be taken in the Dutch language so we think not many Americans will rush to the metropolis of Holland.

Dr. J. W. Wassall delivered the Inaugural Address to the students of the Chicago College of Dental Surgery, September 28th. We understand that considerably more than one hundred matriculates are enrolled for the session of 1887-8.

Dr. Weeks writes: "I wish you would call attention to two errors in the abstract of my paper on 'bridge work,' page 605. In the first line '*not*' should be omitted, and '*not*' should be inserted between '*is*' and '*enclosed*' in last line on first page."

Dr. Grevers drops a lump of camphor gum into water and allows as much of it to dissolve as will do so. He then makes a four or five per cent. solution of cocaine, which is used for injection into the gums or elsewhere for local anæsthetic purposes. He uses the hydrochlorate.

Dr. Farrar said that the intermingling of races was more the cause of irregularities of teeth, than idiocy or feeble mindedness. However the sloping forehead and protruding teeth frequently go together. Idiocy was not so easy to classify as too few observations had been made.

One of the speakers at the Medical Congress thought the Section on Dental and Oral Surgery was not competent to discuss a paper read before it, and he (the speaker) thought it should be referred to another section. Still we are medical men, for all that. *Vide* American Medical Association, June, 1887.

The banquet of the American Medical Editors' Association, at the Riggs House, Washington, D. C., was the most pronounced success of any of the social features of the Congress. Dr. W. C. Wile, the toast master, covered himself with glory, and the address of the president, Dr. Wm. Porter, was a model of brevity and eloquence.

We have heard that the First District Dental Society of New York will hold an anniversary meeting in that city, some time in January, 1888. The success of the meeting last winter was so great, that another and more successful one will be the thing, in view of the unsatisfactory nature of many meetings held during the year just closing.

A DENTIST'S EPITAPH.—They have just put up an epitaph in one of the London cemeteries which equals in pith and exactitude anything of the olden time. Over the grave of a dentist there runs the lines :

“ View this gravestone with all gravity,  
Jones is filling his last cavity.”

Dr. Joseph Walker, of London, Eng., one of the professors in the Dental Hospital of London, spent a few days in Chicago early in October, on his return trip from the “Rockies” and Manitoba. Dr. Walker, we believe, visited every dental college in Chicago while here. We think we will have the pleasure of reading some notes from his facile pen after his return to London.

The first session of the Dental Section was attended by 276, by actual count, although we have heard it stated that over four hundred were present. The number of dentists who registered their names in the book at the entrance of the church was about 285, up to Friday evening. It is undoubtedly true that a greater number were present in Washington, but we do not know the exact total.

Nearly all of the officers and members of the committees of the Dental Section were present in Washington. Four of the vice-presidents were absent. Three of the foreign vice-presidents were in attendance and eight were absent. One foreign secretary out of four was present. Five of the Council were absent. One member of the reception committee failed to turn up, and two members of the committee on operative dentistry were not present.

The clinics were given in the early morning hours, from 8 to 10:30 A. M., which prevented many from attending, as there were so many distractions in the way of receptions, dinners, and evening entertainments generally. On Monday no clinics were given, a few exhibitions taking their place, but on Tuesday nearly all the chairs were filled, and on Wednesday all of them were full ; likewise on Thursday and Friday. No clinics were held on Saturday.

According to the official programme of the Dental Section of the Congress, 125 clinics were to be given during the five days session. A good many names were duplicated however, so that a safe estimate would make the number actually about 70 or 80. The number of papers announced to be read was 27, about 20 were read, the remainder being read by title. In a few instances clinical operators were not in Washington when they were announced to operate.

The exhibits of dental dealers were very complete and interesting at Washington. The displays of the S. S. White Co., Ash & Sons and the American Dental Mfg. Co., being the most extensive. In all cases the goods were well displayed. One very complete exhibit was the collection of Dr. Bonwill's models, from the inception of his electro-magnetic mallet to the completed mechanical mallet and dental engine. All the stages of the evolution of his inventions were laid before us.

A correspondent writes : “ The Dental Section of the International Congress was, in my opinion, a success both intellectually and socially. It afforded the

pleasure of greeting many former acquaintances. The progress of our profession was well exhibited. The clinics were unexceptionally good, all the operators did all they undertook to do, and all were interesting. The operators from the western side of the Appalachians suffered nothing in comparison with those from the east, or elsewhere."

MR. EDITOR.—*Sir*: Dr. Newkirk's neat method as described in the September number of the REVIEW, of putting the used pieces of rubber dam in an envelope with patients name on, would suggest a much neater and less troublesome method, which is to throw the pieces in a waste basket. For most patients would rather pay for a new piece of rubber dam, and take no chances of the dentist making a mistake in the name and piece. Try this "neat" method?

Chicago.

SUBSCRIBER.

There were three from France, one from Holland, one from Switzerland, one from Ireland, four from Germany and Austria, and one each from Russia and Sweden, in attendance upon the Medical Congress, Dental Section. Italy, Hungary, Spain, Greece, Belgium, Denmark, Norway and Wales, were unrepresented. Three were present from Scotland, and nine or ten from England, and one from Canada. California had three, Arizona one, and Oregon one; Mexico none, Southern and Central America none.

A very interesting case of closure of the jaws was brought before the Chicago dental society at the October meeting. A child three and a half years of age has been unable, since last April to open his mouth, as a sequel to a case of scarlet fever complicated with diphtheria. There are no adhesions, and the jaws are firmly held together. A report of the treatment of this case will be given at a later date, Dr. Robert Van Valzah of Terre Haute Ind. sent the child to Chicago, under whose care he has been since early in July.

The Paris *Figaro* says that if you want your children to have pretty teeth, you must begin with the second dentition to press back with the finger, every morning, the teeth which have a tendency to project forward and to pull forward those which tend backward. As a wash—boil in a tumblerful of water a pinch of quassia wood with a pinch of pulverized cocoa. It strengthens the gums and whitens the teeth without injuring the enamel which covers the bone. Wash the mouth after each meal with lukewarm boiled water.

THE FIRST DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.—Early in the coming January the above Society proposes to hold its nineteenth Anniversary. To those who have attended previous meetings, under the auspices of the First District, it is hardly necessary to say that it will, in all probability, be a profitable and pleasant gathering. Every opportunity will be afforded those who attend to see and hear Dentistry from a scientific stand-point. We are credibly informed that the officers are now endeavoring to eclipse their former efforts. For further information see Journals for November and December.

TO THE EDITOR.

*Dear Sir*: Regarding your note in last number of REVIEW on envelopes for saving dams, etc. When one can buy 250—a box—of envelopes good enough for the



purpose for 30 cents at the "Fair," it could hardly be called extravagant to donate one to each patient, though my assistant often does use them over, as it saves her the trouble of preparing new ones. I have her seal the envelope and open it at the end, mark it at the top, and lay in order. Respectfully,

October 6.

GARRETT NEWKIRK.

Dr. N. S. Davis, the President of the Ninth International Medical Congress, quietly looked in on the dental section, on Thursday afternoon, and addressed the gentlemen present, saying that it was a source of gratification to him to have aided in placing the science of dental surgery alongside the other departments of medicine. He said he hoped to live long enough to see all pretended schools of medicine abolished and only one rational scientific profession exercising the art. He expressed the warmest interest in dental medicine, and hoped that every dentist would enlist in the cause of advancement and then advance with other departments.

An unpleasant circumstance in connection with the International Congress was the fact that while the Dental and Oral Section was so well attended, its existence was almost unknown among the physicians. One of the associate editors of the REVIEW was accosted a number of times by members of the Congress, who expressed their surprise that *dentists* were in attendance at a medical congress. Many were not aware of the fact that the dental section had even been established, and others only learned the fact after their arrival, and it is safe to say, that the majority who attended the Congress are to this day ignorant of the existence of a dental section.

The Reception Committee of the Dental Section, received the foreign members of the section and the ladies of their party, informally in the parlor of the Johnson annex of the Arlington hotel, on Tuesday, Sept. 6, at 1 p.m. About fifty of the gentlemen and ladies were present, and a pleasant hour was spent in conversation and the renewal of old acquaintance. Thursday morning the same committee took the party for a drive around the city of Washington. When they reached the eastern front of the Capitol, the gentlemen and ladies from foreign shores were grouped and a photograph was taken of the party. A copy of this was to be presented to each lady and gentleman present as a souvenir of the occasion. The reception committee were then posed and photographed, including the President of the section and one or two others.

Dr. Mariano Semmola on bacteriology and its therapeutic relations: "We know very little of the normal condition of the blood, and biological chemistry is still in its infancy. Man cannot separate himself from these millions of parasites among whom he lives. That bacteriology may be a guide in the cure of disease, we must not only learn all we can of the microbe itself, but, more important than all, must ascertain all that is possible of the conditions of the field of culture. The science of the present knows nothing of the conditions of these fields of culture in living organisms. It is thus evident that in the present condition of bacteriology it cannot be taken as a guide for the treatment of internal diseases. The older school of medicines spoke of organic dispositions, or tendency to such and such a disease. This expression had no meaning, but it expressed the fact. When bacteriology speaks of a need for a special field of culture it says the same thing, because we do not know of what the field of culture consists. Therefore, this cannot be called a science, because a science is never composed of unknown things ;

it goes from the known to the unknown. if a man supposes a fact instead of demonstrating it, the phenomena of nature are not reproduced. When he resorts to hypotheses the power of man disappears. If nature's laws are not respected, the telephone does not work, the electric light does not flash, the steam engine stops. The doctor, then, is the only one who pretends to become the master of nature without knowing her laws. Referring again to the failure of medicine to follow up a discovery in the scientific way with thorough research and demonstration, and its tendency to accept conclusions quickly, Professor Semmola said that modern bacteriology may lead the way to the most fruitful field of inquiry in the future, but for the present it has produced no practical results in the cure of internal diseases. It has not, he claimed, been demonstrated in what measure microbes are the causes of diseases. He, therefore, hoped that the younger generation would continue experimental researches with the thoroughness of method which the great masters have transmitted to us. They must renounce their pre-conceived ideas in medicine, and interrogate nature without torturing her. Scientific independence must be preserved. They must not proceed without measuring their steps. He trusted that his desire for scientific independence in such researches would be echoed in this land of independence."—*Medical Record*.

#### TO THE EDITOR OF THE DENTAL REVIEW :

The following is a list of those who have contributed to the fund for prosecuting illegal practitioners of dentistry in Illinois :

W. B. Ames,	J. A. Stansbury,
A. W. Harlan,	W. J. Martin,
B. D. Wikoff,	E. L. Clifford,
F. Deschauer,	C. N. Johnson,
D. B. Freeman,	O. D. Swain,
C. F. Hartt,	E. J. Perry,
T. W. Brophy,	D. M. Towner,
Louis Ottofy,	J. C. Irey,
E. E. Davis,	E. N. Greenwood,
L. L. Davis,	H. C. Magnusson,
F. C. Mahlacke,	A. C. Hewett,
J. Spirkel,	D. C. Bacon,
G. W. Nichols,	E. L. Graves,
A. B. Clark,	F. G. Yates,
W. G. Stowell,	C. H. Wachter,
W. B. Smith,	J. A. Swasey,
J. W. Wassall,	J. G. Reid,
G. N. West,	C. P. Pruyn,
E. M. S. Fernandez.	W. B. Smith, Secretary.

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#### OBITUARY.

DIED—in Monroe, Wis., September 11, 1887, Dr. J. S. Reynolds.

Dr. Reynolds was well known throughout the West as an energetic and progressive dentist. He was an active and useful member of the Wisconsin State Dental Society, and often materially contributed to the proceedings of other similar organizations. In his own community he was beloved and respected.

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**MICROSCOPIC OBSERVATIONS**, showing the comparative value and availability of various Antiseptics in the treatment of Diseases of the Oral Cavity, by W. D. Miller, A. B., Ph. D., D. D. S., Prof. of Operative and Clinical Dentistry, University of Berlin, from whose deductions LISTERINE appears to be the most acceptable prophylactic for the care and preservation of the teeth.

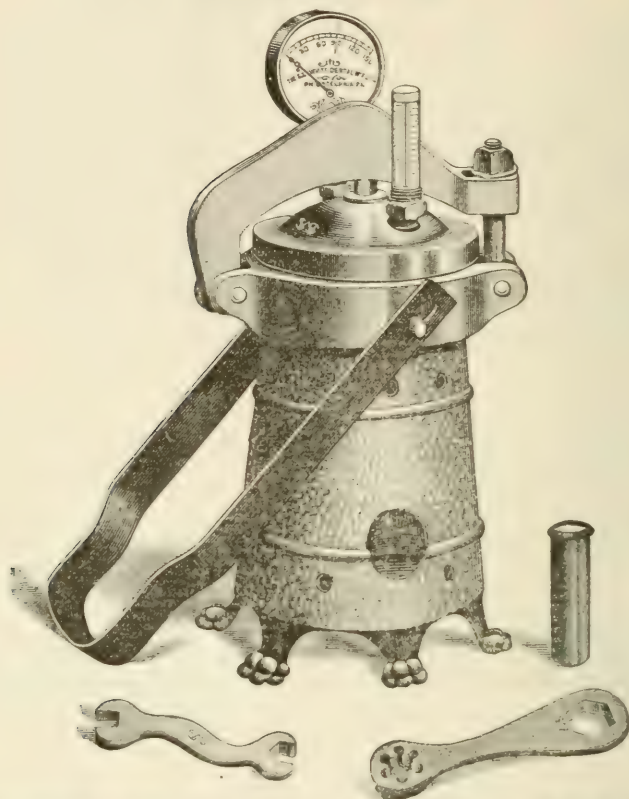
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A new vulcanizer coming into the field at this day must have distinctive merits of a high order to enable it to make head against those which have been long before the profession. For the Mann Vulcanizer we claim many advantages over all others of its class.

First of these is its superior strength. The boiler is made of extra-heavy seamless copper. The quality of the material, its thickness, and the method of manufacture insure a strength far beyond what any ordinary use of the machine would require; but to make assurance doubly sure, each boiler is tested before being put on sale by both hydrostatic and steam pressure, so that we have absolute knowledge that the strength is far in excess of requirements. The inside diameter is  $4\frac{1}{2}$  inches, providing ample space for the largest flask.

In the facility with which the Mann Vulcanizer is operated is another decided advantage. The lid, instead of being screwed on to the boiler, is fitted neatly, and rests on a shoulder formed on the casting, and is screwed by a heavy steel clamping-bar and screw-bolt. One end of the bar is hinged to the side of the boiler, the other end being slotted to receive the screw-bolt, which is hinged to the other side of the boiler. Rubber packing between the lid and the shoulder on which it rests makes the joint steam-tight. The lid is removed by unscrewing the nut of the screw-bolt a turn or two, when the bolt drops out of the slot and the bar is turned back, leaving the lid

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THE S. S. WHITE DENTAL MFG. CO.,  
Philadelphia. New York. Boston. Chicago. Brooklyn.

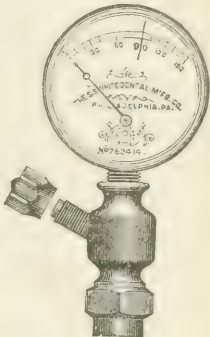


free to be removed. This method, while it gives as perfect a fastening as the usual plan, affords very much greater facility for opening and closing the boiler. Should it stick, by reason of the packing becoming chilled (a common occurrence with all vulcanizers), it is easily pried off with very much less trouble than is required when the top screws on.

Another decided advantage, to which special attention is asked, is the bail, a simple but heretofore unthought of device, which greatly facilitates the handling of the vulcanizer, especially when hot. Thus the boiler can be opened for the removal of one case and the placing of another. The nut of the clamping-bolt is loosened a little at a time, allowing the steam to escape gradually until the bolt is released, when the bar can be thrown back and the top of the boiler raised. The bail is also useful in removing the boiler from the jacket, in tightening or loosening the screw-bolt when closing or opening the boiler, and at all times when the boiler is to be lifted. When not in use it is readily removed.

The thermometers used are carefully and reliably made for this special purpose. The metallic frame is screwed upon an iron cup-shaped seat, containing mercury, forming a "mercury bath."

The whole apparatus is carefully made of the best materials, and we believe it will prove not only the most convenient but the most durable vulcanizer on the market.



STEAM-GAUGE FOR VULCANIZERS.

We have adopted a reliable Steam-Gauge, to which is connected a condensing-chamber with pipes so arranged as to form a trap. Above this trap is placed a safety-disk attachment.

This Gauge can be placed on any of the modern vulcanizers having a blow off or safety attachment, by simply removing the cap of same and screwing on the Gauge.

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WITHOUT STEAM-GAUGE.

Two-Case Vulcanizer, for	Alcohol.....	\$18.00
" " "	" Gas.....	18.00
" " "	" Kerosene, with Union Stove.....	18.50
" " "	" " " No. 1 Hot-Blast Stove.....	20.75
Three " "	" Alcohol.....	20.00
" " "	" Gas.....	20.00
" " "	" Kerosene, with Union Stove.....	20.50
" " "	" " " No. 1 Hot-Blast Stove.....	22.75
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Extract from the General Report of the Judges on awards of Group XXIV., Centennial, 1876.

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## H. D. Justi's Superior Insoluble Cement.

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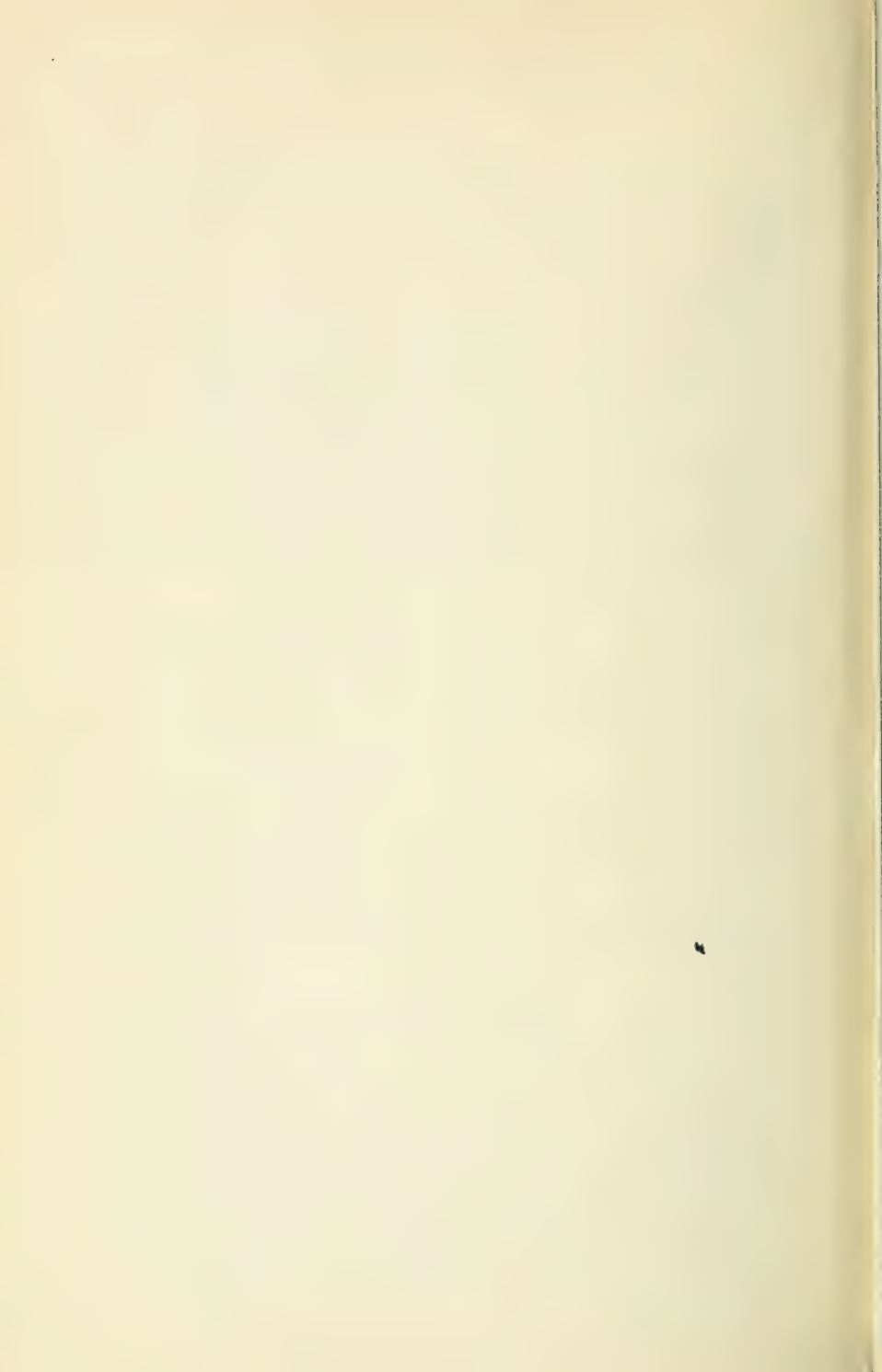
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